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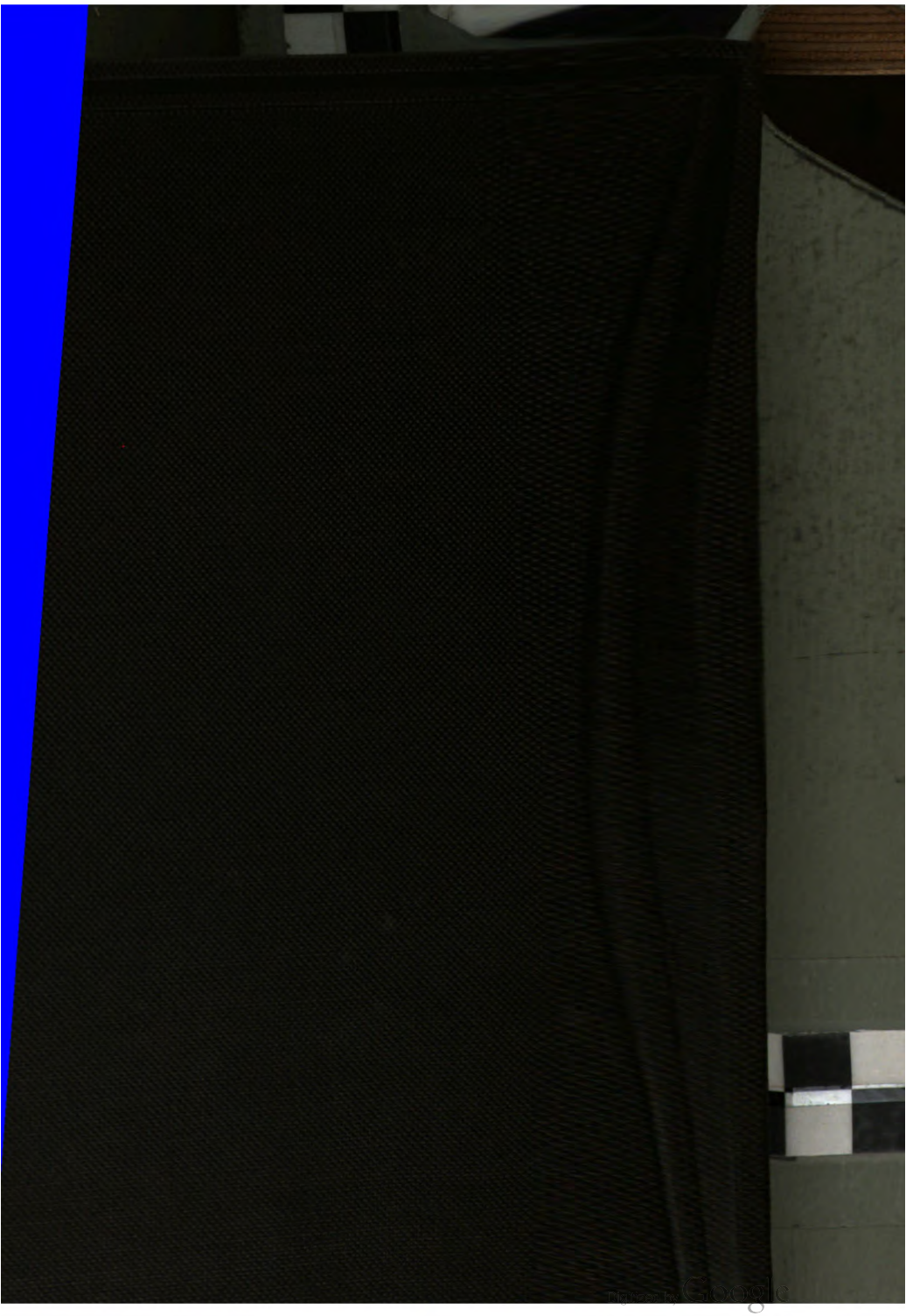

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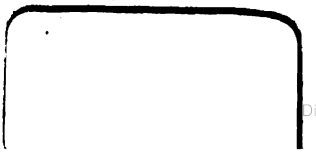

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TRANSACTIONS

OF

THE MEDICAL SOCIETY

OF

LONDON.

VOLUME THE TWENTY-FOURTH.

EDITED BY

FREDERICK C. WALLIS, F.R.C.S.,

AND

ARTHUR FRANCIS VOELCKER, M.D., F.R.C.P.

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1893. JOHN SYER BRISTOWE, M.D., F.R.S., On Syphilitic Affections of the Nervous System.

1894. FREDERICK TREVES, On Peritonitis.

1895. FREDERICK T. ROBERTS, M.D., On the Combinations of Morbid Conditions of the Chest.

1896. W. WATSON CHEYNE, F.R.S., On the Objects and Limits of Operations for Cancer.

1897. F. DE HAVILLAND HALL, M.D., On Diseases of the Nose and Throat in Relation to General Medicine.

1898. JOHN H. MORGAN, On the Affections of the Urinary Apparatus in Children.

1899. SAMUEL WEST, M.D., On Some of the Clinical Aspects of Granular Kidney.

1900. Sir WILLIAM MITCHELL BANKS, Practical Observations on Cancer of the Breast.

1901. J. MITCHELL BRUCE, M.D., Diseases and Disorders of the Heart and Arteries in Middle and Advanced Life.

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1774. James Sims, M.D.
1776. John Millar, M.D.
1777. Nath. Hulme, M.D., F.R.S.
1778. John Coakley Lettsom, M.D., F.R.S.
1779. George Edwards, M.D.
1780. John Kooystra, M.D.
1781. Samuel Foart Simmons, M.D., F.R.S.
1782. Loftus Wood, M.D.
1783. John Sims, M.D.
1784. John Whitehead, M.D.
1785. John Relph, M.D.
1787. Joseph Hooper.
1788. John Meyer, M.D.
1789. Richard Dennison, M.D.
1790. George Wallis, M.D.
1791. Samuel Sutton, M.D.
1792. Edward Fryer, M.D.
1793. James Jameson, M.D.
1794. Gilbert Thompson, M.D.
1795. John Abernethy.
1796. John Coakley Lettsom, M.D., F.R.S.
1797. James Ware.
1798. Samuel Ferris, M.D., F.R.S.
1799. Edward Ford.
1800. Thomas Bradley, M.D.
1801. William Chamberlaine.
1802. John Sims, M.D.
1803. John Andrée.
1804. John Coakley Lettsom, M.D., F.R.S.
1805. George Pinckard, M.D.
1806. Henry Field.
1807. Joseph Adams, M.D.
1808. John Mason Good, F.R.S.
1809. Sayer Walker, M.D.
1810. George Birkbeck, M.D.
1811. William Blair.
1812. Richard Temple, M.D.
1813. Richard Saumarez, F.R.S.
1814. George Rees, M.D.
1815. John Taunton.
1816. Henry Clutterbuck, M.D.
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1820. Thomas Hancock, M.D.
1821. Thomas Callaway.
1822. James Copland, M.D.
1823. Edward Grainger.
1824 Gordon Smith, M.D.
1825 Eusebius Arthur Lloyd.
1826. John Haslam, M.D.
1827. William Kingdom.
1828. John Burne, M.D.
1829. William Greville Jones.
1830. Leonard Stewart, M.D.
1831. Montague Gossett.
1832. John Whiting, M.D.
1833. Frederick Salmon.
1834. William Shearman, M.D.
1835. Walter Cooper Dendy.
1836. William F. Blicke, M.D.
1837. Edward Headland.
1838. Theophilus Thompson, M.D., F.R.S.
1839. George Pilcher.
1840. James Risdon Bennett, M.D.
1841. Wm. Dingle Chowne, M.D.
1842. Henry Hancock.
1843. Leonard Stewart, M.D.
1844. Thomas Bell, F.R.S.
1845. Marshall Hall, M.D.
1846. John Bishop, F.R.S.
1847. Golding Bird, M.D., F.R.S.
1848. Francis Hird.
1849. William Hughes Willshire, M.D.
1850. Francis Hird.
1851. Richard Rowland.
1852. Edwin Canton.
1853. John Snow, M.D.

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1855. James Fernandez Clarke.
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1859. Charles Henry Felix Routh, M.D.
1860. John Gay.
1861. Arthur Leared, M.D.
1862. Victor de Mérig.
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1868. William Frederick Teevan.
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1870. Francis Mason.
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1873. John Cockle, M.D.
1874. Robert Brudenell Carter.
1875. George Buchanan, M.D.
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1877. John Hughlings Jackson, M.D., F.R.S.
1878. Alfred Carpenter, M.D.
1879. Walter John Coulson.
1880. William Henry Broadbent, M.D.
1881. Arthur Edward Durham.
1882. Edmund Symes Thompson, M.D.
1883. Edward Lund.
1884. Charles Theodore Williams, M.D.
1885. George Murray Humphry, M.D., F.R.S.
1886. Richard Douglas Powell, M.D.
1887. Sir William MacCormac.
1888. Sir Joseph Fayrer, K.C.S.I., M.D., F.R.S.
1889. Jonathan Hutchinson, F.R.S.
1890. Arthur Ernest Sansom, M.D.
1891. Sir Joseph Lister, Bart., F.R.S.
1892. Sir James Crichton-Browne, M.D., F.R.S.
1893. W. Mitchell Banks.
1894. William M. Ord, M.D.
1895. A. Pearce Gould.
1896. William H. Allchin, M.D.
1897. Edmund Owen.
1898. Frederick T. Roberts, M.D.
1899. Alban Doran.
1900. J. Kingston Fowler, M.D.
1901. F. Richardson Cross.

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1787. William Falconer, M.D.
1790. Robert Willan, M.D.
1791. John Coakley Lettsom, M.D.
1795. John Mason Good.
1801. Francis Bouttatz, M.D.
1803. Edward Jenner, M.D.
1824. Robert W. Bampfield.
1828. John George Parry.
1831. William Augustus Guy.
1834. William James Clement.
1835. George Moore.
1836. Thomas Egerton Bryant.
1838. George Pilcher.
1840. Samuel Osborn.
1842. James Risdon Bennett, M.D.
1843. John Weaver Lever, M.D.
1844. Henry Pratt Robarts.
1845. Walter Cooper Dendy.
1846. Robert Mortimer Glover, M.D.
1847. Silas Stedman.
1849. John Milligan.
1850. Richard Payne Cotton, M.D.
1851. Richard Hodges.
1852. Frederick William Headland.
1853. Alfred William Poland.
1854. Benjamin Ward Richardson, M.D.
1856. William Burke Ryan.
1857. Edwin Canton.
1858. Thomas Herbert Barker, M.D.
1859. Alderman Thomas Houghton Waters.
1868. John Clay.
1870. Thos. Smith Clouston, M.D.
1872. Edwards Crisp, M.D.
1873. John Kent Spender, M.D.
1877. Peter Murray Braidwood, M.D.
1878. John Milner Fothergill, M.D.
1882. Thomas Michael Dolan, M.D.
1883. Norman Porritt.
1886. John Strahan.
1888. Hobart Amory Hare, M.D., U.S.A.
1893.* William Richard Gowers, M.D., F.R.S.
1896. Victor Horsley, F.R.S.
1899. Sydney Monckton Copeman, M.D.

* *First Triennial Award under the Charity Commissioners' New Scheme*, vide *Trans., vol. xiv, p. xi.*

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THE HONORARY FELLOWS.

1893. BARNES, ROBERT, M.D., Bernersmede, Eastbourne, LL, C.

1896. BERGER, PAUL, 16, Rue de Bourgogne, Paris. Professor of Clinical Surgery in the Faculty of Medicine, Member of the Academy of Medicine, Surgeon to "l'hôpital de la Pitié."

1897. BERGMANN, Prof. E. VON, M.D., Berlin.

1881. BILLINGS, JOHN S., M.D., Washington, Surgeon to the United States Army.

1899. BROUARDEL, PAUL CAMILLE HIPPOLYTE, 85, Boulevard, St. Germains, Paris. Professor of Medical Jurisprudence, late Dean of the Faculty of Medicine, University of Paris; Member of the Institute and of the Academy of Medicine.

1894. CATRIN, LOUIS, M.D., Médecin-major de première classe, Professeur agrégé à l'Ecole du Val-de-Grace, Paris.

1873. CHAUVEAU, A., late Professor of Physiology at the Medical School of Lyons, 10, Avenue Jules Janin, Paris.

1881. EMMET, THOMAS ADDIS, M.D., 89, Madison-avenue, Surgeon to the Woman's Hospital of the State of New York.

1899. FAYRER, Sir JOSEPH, Bart., K.C.S.I., LL.D., M.D., F.R.S., 16, Devonshire-street, Portland-place, W. P, VP, LL, SM, O, C.

1886. GAIRDNER, Sir WILLIAM TENNANT, K.C.B., M.D., F.R.S., 32, George-square, Edinburgh, formerly Professor of Medicine in the University of Glasgow, Physician to H.M. the King in Scotland.

1894. GANT, FREDERICK JAMES, F.R.C.S., 16, Connaught-square, W., Consulting Surgeon to the Royal Free Hospital. P, VP 2, LL, O, C 3.

1897. GUYON, FELIX, M.D., Professor in the Faculty of Medicine, Member of the Institute and of the Academy of Medicine, Paris.

1897. HINGSTON, Sir W. HALES, M.D., Montreal.

1890. KOCHER, THEODOR, Professor, Berne.

1901. MACCORMAC, SIR WILLIAM, Bart., K.C.B., K.C.V.O., F.R.C.S., 13, Harley-street, W. P, VP, § 2, C 4, O.

1878. MITCHELL, S. WEIR, M.D., Walnut-street, Philadelphia.

1899. OSLER, WILLIAM, M.D., F.R.S., Baltimore, U.S.A., Professor of Medicine, Johns Hopkins University, and Physician-in-Chief, Johns Hopkins Hospital.

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1899 RAUCHFUSS, CHARLES ANDREIVITCH, 8, Ligovka, St. Petersburg, Director of the Prince of Oldenburg's Hospital for Children.

1897. RODDICK, T. G., M.D., 80, Union-avenue, Montreal.

1877. SANNÉ, A., 33, Rue de Naples, Paris.

1899. SKLIFOSOFFSKY, NICHOLAS VASILIVITCH, M.D., Director and Professor of Surgery, Imperial Clinical Institute of the Princess Helena, Paulovna, St. Petersburg.

1873. VIRCHOW, RUDOLPH, M.D., Professor of Pathological Anatomy in the University of Berlin.

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CORRESPONDING FELLOWS.

1882. Badaloni, Giuseppe, M.D., Bologna, Italy.
1856. Baker, Albert, M.D., Fosse Cottage, Batheaston, Bath.
1855. Beardsley, Amos, The Towers, Grange, Lancashire.
1850. Beneke, F. W., M.D., New York.
1850. Böhm, Professor, M.D., Vienna.
1850. Bottini, Enrico, M.D., Milan.
1855. Coates, Charles, M.D., F.R.C.P., 10, Circus, Bath, Consulting Physician to the Bath Royal United Hospital. c 3.
1850. Cox, William Isidore, Hawkesbury-Upton, Gloucestershire. c.
1853. Fallot, R., M.D., St. Laurent d'Aigonze, Montpelier, France.
1889. Frank, Philip, M.D., F.R.C.P., 3, Elvaston-place, S.W.
1876. Griffith, Richard Glyn, M.R.C.S., Portledge House, Bath.
1896. Hamilton, Allan McLane, M.D., 44, East Twenty-ninth Street, New York.
1864. Hasenfeld, Emmanuel, M.D., Pesth.
1875. Jones, Philip Sydney, M.D., F.R.C.S., Examiner in Medicine in the University of Sydney, Australia, Hon. Consulting Surgeon to the Sydney Infirmary.
1851. Kölliker, Albert, M.D., Professor of Anatomy and Physiology at the University of Wurzburg.
1876. Leighton, Walter H., M.D., Lowell, Massachusetts, U.S.A.
1851. Negri, Gaetano, M.D. Pisa.
1865. Peruzzi, Domenico, M.D., 22, Via Mazzini, Bologna.
1886. Rocha, A., M.D., Professor of Clinical Medicine at the University of Coimbra, Beira, Portugal.
1860. Roussel, M.D., Dean of the Faculty of Medicine, Montpelier.
Scharlan, Gus. W., M.D., Stettin, Prussia.
1876. Schmitz, Richard, M.D., Neuenahr.
1874. Schutgowsky, J., St. Petersburg.
1851. Stockwell, Thomas Goldesbrough, F.R.C.S., 6, Circus, Bath, Surgeon to the Bath Royal United Hospital.
1851. Williams, Charles, F.R.C.S. Edin., 48, Prince of Wales-road, Norwich; Senior Surgeon to the Norfolk and Norwich Hospital.

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OF

THE MEDICAL SOCIETY OF LONDON.

(Corrected to 30th November, 1901.)

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VP.—VICE-PRESIDENT.	SM.—SILVER MEDALLIST.
T.—TREASURER.	O.—ORATOR.
L.—LIBRARIAN.	CFC.—CHAIRMAN, HOUSE AND FINANCE COMMITTEE.
S.—SECRETARY.	
C.—COUNCILLOR.	§—SEC. FOR FOREIGN CORRESPONDENCE.
LL.—LETTSOMIAN LECTURER.	*—LIFE MEMBER.
	TR.—TRUSTEE.

The date prefixed is that of election. The figures appended indicate the number of Sessions served, and refer to past appointments ONLY.

1890. ABBOT-ANDERSON, WILLIAM MAURICE, M.B., 36, Harley-street, W.
1888. ABBOTT, CHARLES EDWARD, M.R.C.S., 1, Wellington-place, Cheltenham.
1891. ABRAHAM, PHINEAS S., M.D., 2, Henrietta-street, Cavendish-square, W.
1896. ABRAHAMS, BERTRAM LEWIS, M.B., 14, Welbeck-street, W.
1894. ACHARD, ALEXANDER LOUIS, M.D., 9, Blandford-street, Portman-square, W.
1890. ACKLAND, ROBERT CRAIG, M.R.C.S., 54, Brook-street, Grosvenor-square, W.
1883. ACLAND, THEODORE DYKE, M.D., 19, Bryanston-square, W. C 2.
1878. *ALLCHIN, WILLIAM HENRY, M.D., F.R.S.E., 5, Chandos-street, Cavendish-square, W. SM, L 18, VP 2, O, C 2. *President.*
1873. ALLEN, HENRY MARCUS, F.R.C.P. Edin., 17, Palmeira-square, Brighton.
1873. ALLFREY, CHARLES HENRY, M.D., Plas Newydd, St. Leonards-on-Sea.
1883. ALLINGHAM, HERBERT W., F.R.C.S., 25, Grosvenor-street, W. C 3.
1872. *ALLINGHAM, WILLIAM, F.R.C.S., 59, Marina, St. Leonards-on-Sea. C.
1894. ALSTON, WILLIAM EVELYN, M.B., Wheathampstead, Herts.
1885. ANDERSON, JOHN, C.I.E., M.D., 9, Harley-street, W. C 3.

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1869. ARMITAGE, SAMUEL HARRIS TATHAM, M.D., 39, Grosvenor-street, W.
1894. ARMSTRONG, WILLIAM, M.R.C.S., J.P., Thorncliffe, Buxton.
1894. ASHE, WILLIAM PERCY, M.D., 17, Alexander-square, S.W.
1873. ATKINSON, EDWARD, M.R.C.S., 93, Albion-street, Leeds.
1899. AULD, ALEXANDER GUNN, M.D., 23, Henrietta-street, W.
1892. AYRES, CHARLES JAMES, M.D., 55A, Welbeck-street, W.

1873. BAGSHAWE, FREDERIC, M.D., 35, Warrior-square, St. Leonards-on-Sea. C.
1892. BAILEY, HENRY FREDERICK, M.R.C.S., The Hollies, Lee-terrace, Lee, S.E. C 2.
1894. BAILEY, ROBERT COZENS, M.S., 21, Welbeck-street, W.
1891. BAILY, PERCY J., M.B., County Asylum, Hanwell, W.
1898. BAIN, WILLIAM, M.D., Shaythorpe, York-place, Harrogate.
1876. *BAKER, HENRY FRANCIS, F.R.C.S. Edin., 2, Mandeville-place, Manchester-square, W. C.
1890. BAKER, WILLIAM HENRY, M.R.C.S., 152, Westbourne-grove, W. C 2.
1891. BALL, JAMES BARRY, M.D., 12, Upper Wimpole-street, W.
1881. BALLANCE, CHARLES ALFRED, M.S., 106, Harley-street, W. S 2, C 3. *Vice-President.*
1884. BANKS, Sir W. MITCHELL, F.R.C.S., LL.D., 28, Rodney-street, Liverpool. O, C, LL. *Vice-President.*
1899. BARKER, ARTHUR E. J., F.R.C S., 87, Harley-street, W.
1901. BARLOW, H. CECIL, M.B., St. Ives, Farnborough, Hants.
1898. BARNARD, HAROLD LESLIE, M.S., 9, Upper Wimpole-street, W.
1883. *BARNES, ROBERT, M.D., *Honorary Fellow* (*q. v.*).
1874. BARRETT, HOWARD, M.R.C.S., 49, Gordon-square, W.C. VP 2, C. *Councillor.*
1896. BARRETT, WALTER RUSSELL, M.R.C.S., 1, Harley-street, W.
1901. BARRON, HENRY T., M.D., 12, Crockerton-road, S.W.
1884. BARROW, ALBERT BOYCE, F.R.C.S., 8, Upper Wimpole-street, W. C.
1900. BARTER, WILLIAM, M.D., 47, Greencroft-gardens, West Hampstead, N.W.
1901. BARTON, PERCY FREDERIC, M.B., "The Rowans," Lingfield-road, Wimbledon, S.W.
1886. BARWELL, RICHARD, F.R.C.S., 55, Wimpole-street, W.
1884. BATEMAN, FREDERICK AUGUSTUS NEWTON, M.D., 4, Charles-street, St. James's-street, S.W.
1886. BATTERHAM, JOHN WILLIAMS, M.B., Bank House, Grand-parade, St. Leonards-on-Sea.
1888. BATTLE, WILLIAM HENRY, F.R.C.S., 49, Harley-street, W. C 3, S 2.
1896. BAYLISS, RICHARD ARTHUR, M.R.C.S., 5, Gay-street, Bath.
1882. BEACH, FLETCHER, M.B., Winchester House, Kingston-hill, Surrey, and 79, Wimpole-street, W. C.
1887. BEALE, EDWIN CLIFFORD, M.B., 23, Upper Berkeley-street, W. C 2.
1891. BEALE, PEYTON T. B., F.R.C.S., 61, Grosvenor-street, W.
1880. BEEVOR, CHARLES EDWARD, M.D., 135, Harley-street, W. S 2, C. *Trustee.*

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1900. Belfrage, S. Henning, M.B., 2, Montagu-place, Portman-square, W.
1900. Bell, James Vincent, M.D., Star Hill, Rochester.
1881. Bennet, Robert Ottiwell-Gifford, M.D., Tankerville House, Park-place, Buxton.
1883. Bennett, Sir William Henry, F.R.C.S., 1, Chesterfield-street, Mayfair, W. c.
1900. Benson, Alfred, M.B, 79, Maida Vale, W.
1896. Berkeley, Comyns, M.B., 53, Wimpole-street, W.
1887. Berry, James, F.R.C.S., 21, Wimpole-street, W. c.
1898. Best, William Harris, L.S.A., Ilford, Essex.
1873. Beveridge, James Spowart, M.R.C.P. Edin., Melton Constable, Norfolk.
1890. Bidwell, Leonard Arthur, F.R.C.S., 59, Wimpole-street, W.
1888. Bird, Matthew Mitchell, M.D., St. Mary's Hospital, W.
1850. *Birkett, John, F.R.C.S., 1, Sussex-gardens, W. vp, c 6.
1889. Bisshopp, Francis Robert Bryant, M.B., Belvedere, Lonsdale-gardens, Tunbridge Wells.
1886. *Black, William Gall, F.R.C.S., 2, George-square, Edinburgh.
1897. Blacker, George Francis, M.D., 11, Wimpole street, W.
1901. Black-Milne, James, M.B., Brookfield, Reigate.
1881. Blaker, Walter Campbell, M.R.C.S., Royal Societies Club, 63, St. James's-street, S.W.
1888. Blanc, Leon, M.D., Aix les Bains, France.
1892. Bland-Sutton, John, F.R.C.S., 48, Queen Anne-street, W. *Councillor.*
1871. *Bloxam, John Astley, F.R.C.S., 75, Grosvenor-street, W. vp 2, s 2, c 3.
1879. Bott, Henry, M.R.C.S., Brentford, Middlesex.
1886. Bourns, Newcome Whitelaw, M.D., 78, Redcliffe-gardens, S.W.
1886. Boustead, Robinson, M.D., Lieutenant-Colonel, R.A.M.C., c/o Messrs. King & Co., 45, Pall Mall, S.W.
1895. Bower, David, M.D., Springfield House, Bedford.
1889. Bowles, Robert Leamon, M.D., 16, Upper Brook-street, W. c 3.
1895. Boyd, Stanley, F.R.C.S., 134, Harley-street, W. c 2.
1899. Bradford, J. Rose, M.D., F.R.S., 8, Manchester-square, W.
1896. Bradley, James Edward Campbell, M.B., Greville House, Raynes Park, Wimbledon.
1889. Braine, C. Carter, F.R.C.S., 26, Wimpole-street, W.
1876. Brewer, Alexander Hampton, M.R.C.S., 136, Richmond-road, Dalston, N.E.
1896. Bridges, E. Chittenden, M.B., Priory-mansions, Drayton-gardens, South Kensington, S.W.
1873. Bridgwater, Thomas, M.B., LL.D., J.P., Harrow, Middlesex.
1893. Broadbent, John Francis Harpin, M.B., 35, Seymour-street, W
1862. Broadbent, Sir William Henry, Bart., K.C.V.O., M.D., F.R.S., 84, Brook-street, W. p, vp, o, ll, c 4.
1900. Broadbent, Walter, M.D., 50, Brunswick-square, Brighton.

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1890. BROOK, WILLIAM FREDERICK, F.R.C.S., Longlands House, St. Helen's-road, Swansea.
1898. BROOKE, GILBERT E., L.R.C.P., East Harbour, Turk's Island, West Indies.
1878. BROWN, ANDREW, M.D., 27, Lancaster-road, Belsize-park, N.W.
1889. BROWNE, GEORGE BUCKSTON, M.R.C.S., 80, Wimpole-street, W. C 2.
1873. BROWNE, LENNOX, F.R.C.S. Edin., 15, Mansfield-street, Portland-place, W.
1901. BROWNE, OSWALD A., M.D, 7, Upper Wimpole-street, W.
1887. BRUCE, JOHN MITCHELL, M.D., 23, Harley-street, W. LL, VP 2, C 3.
1873. BRUNJES, MARTIN, M.R.C.S., 270, Willesden-lane, N.W.
1898. BRUNTON, JOHN, M.B., 16, Endsleigh-street, Tavistock-square, W.C.
1874. *BRUNTON, Sir T. LAUDER, M.D., F.R.S., 10, Stratford-place, W. LL, VP, C 4, SM.
1901. BRYANT, JOHN H., M.D., 4, St. Thomas's-street, S.E.
1850. *BRYANT, THOMAS, F.R.C.S., 27, Grosvenor-street, W. P, VP, LL, S 2, C 4. *Trustee.*
1901. BUCKLEY, CHARLES W., M.D., Buxton, Derbyshire.
1897. BUNCH, JOHN LE MARE, M.D.
1885. *BUNNY, J. BRICE, M.R.C.S., Warre House, Bishops Lydeard, Taunton.
1886. BUTLER-SMYTHE, ALBERT CHARLES, F.R.C.S., 76, Brook-street, W.

1886. CAHILL, JOHN, M.D., 12, Seville-street, Lowndes-square, Hyde Park, S.W. C 3.
1892. CALDWELL, ROBERT, F.R.C.S., Major, R.A.M.C., care of Messrs. Holt and Co., 17, Whitehall-place, S.W.
1893. CALEY, HENRY ALBERT, M.D., 24, Upper Berkeley-street, W. C 2. *Councillor.*
1891. CALVERT, JAMES, M.D., St. Bartholomew's Hospital, E.C. S 2. C. *Councillor.*
1897. CAMERON, EWAN GORDON, M.R.C.S., 64, Great Portland-street, W.
1892. CARGILL, LIONEL VERNON, F.R.C.S., 15, Stratford-place, W.
1892. CARLESS, ALBERT, F.R.C.S., 10, Welbeck-street, W.
1882. CARPENTER, ARTHUR BRISTOWE, M.B., Wykeham House, Bedford Park, Croydon.
1889. CARR, JOHN WALTER, M.D., 19, Cavendish-place, W. *Councillor.*
1897. CARRÉ, L. J. GERARD, M.D., care of Principal Medical Officer, Cape Town, South Africa.
1901. CARSON, HERBERT WILLIAM, F.R.C.S., 55A, Welbeck-street, W.
1871. CARTER, ROBERT BRUDENELL, F.R.C.S., 31, Harley-street, W. P, VP, O, LL, C 4.
1889. CARTWRIGHT, ALEXANDER, M.R.C.S., 32, Old Burlington-street, W.
1876. CARTWRIGHT, S. HAMILTON, *Travelling.*
1899. CATHCART, GEORGE CLARK, M.B., 35, Harley-street, W.
1876. *CATHCART, SAMUEL, M.R.C.P. Edin., 11, Hornsey-lane-gardens, Highgate, N.
1889. CAUTLEY, EDMUND, M.D., 15, Upper Brook-street, W.

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1896. CHAPMAN, CHARLES WILLIAM, M.D., 21, Weymouth-street, W.
1885. CHASSEAUD, WILLIAM, M.D., Smyrna, Asia Minor.
1889. CHEYNE, WATSON, C.B., F.R.C.S., F.R.S., 75, Harley-street, W. LL, C.
1877. *CHISHOLM, EDWIN, M.D., 82, Darlinghurst-road, Sydney, New South Wales.
1895. CHRISTMAS, ROBERT WILLIAM SAMUEL, M.R.C.S., 23, Hopton-road, Streatham, S.W.
1871. CHURTON, THOMAS, M.D., 35, Park-square, Leeds. C.
1875. CLARK, ANDREW, F.R.C.S., 71, Harley-street, W. C.
1883. CLARKE, WILLIAM BRUCE, F.R.C.S., 51, Harley-street, W. C.
1894. CLINCH, THOMAS ALDOUS, M.D., 16, Regent-street, Nottingham.
1879. *CLUTTON, HENRY HUGH, F.R.C.S., 2, Portland-place, W. VP 2, C 3.
1899. COBB, ERNEST HERBERT, M.R.C.S., Belmont, Stevenage, Herts.
1894. COCHRANE, JAMES MACKEAND, M.D., 10, Weymouth-street, W.
1899. COHEN, GEORGE ALEXANDER, M.B., 17, Grand-parade, Harringay, N.
1893. COLE, ROBERT HENRY, M.D., Moorcroft, Hillingdon, Uxbridge.
1887. COLLIER, WILLIAM, M.D., St. Mary's Entry, Oxford. C.
1892. COLMAN, WALTER S., M.D., 22, Wimpole-street, W. C.
1871. COOK, JOHN, M.D., 1, Nottingham-terrace, Regent's Park, N.W.
1862. COOPER, ALFRED, F.R.C.S., 9, Henrietta-street, Cavendish-square, W. C 3, VP.
1888. COOPER, ARTHUR, M.R.C.S., 20, Old Burlington-street, W.
1894. COOPER, PETER, M.R.C.S., 35, Shooters-hill-road, Blackheath, S.E.
1894. CORBOULD, VICTOR A. L. E., M.D., 43, Victoria-road, Kensington, W.
1872 CORFIELD, WILLIAM HENRY, M.D., 19, Savile-row, W. C.
1899. CORNER, HARRY, M.D., Brook House, Southgate, N.
1898. COTTON, HOLLAND JOHN, M.D., 33, Lowndes-street, S.W.
1891. COUMBE, JOHN BATTEN, F.R.C.S., 55, High-street, Lowestoft.
1879. COUPLAND, SIDNEY, M.D., 16, Queen Anne-street, W. VP 2, C 3.
1889. COURTNEY, GUY BUDD, M.B., 28, Augusta-road, Ramsgate.
1873. CRAVEN, Sir ROBERT MARTIN, F.R.C.S., J.P., 14, Albion-street, Hull.
1889. CRAWFORD, JAMES, M.D., Grosvenor-mansions, 80, Victoria-street, S.W.
1899. CREASY, L. ELIOT, M.R.C.S., 35A, Welbeck-street, W.
1871. CRICHTON-BROWNE, Sir JAMES, M.D., F.R.S., 61, Carlisle-place-mansions, S.W. P, O, C 2.
1881. CRIPPS, WILLIAM HARRISON, F.R.C.S., 2, Stratford-place, W. C 2.
1880. CRITCHETT, Sir GEORGE ANDERSON, F.R.C.S. Edin., 21, Harley-street, W.
1880. CROCKER, HENRY RADCLIFFE, M.D., 121, Harley-street. C 3.
1901. CROMBIE, ALEXANDER, M.D., Lieutenant-Colonel, I.M.S. (*retired*), 3A, Bickenhall-mansions, Gloucester-place, W.
1881. CROSS, FRANCIS RICHARDSON, F.R.C.S., Worcester House, Clifton, Bristol. O.
1890. CULLINGWORTH, CHARLES JAMES, M.D., 14, Manchester-square, W. C 3.
1874. CUMBERBATCH, ALPHONSO ELKIN, F.R.C.S., 80, Portland-place, W. C 2.

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1897. Dakin, William Radford, M.D., 8, Grosvenor-street, W. *Councillor.*
1894. Dalby, John Lyttleton, M.R.C.S., 13, Buckingham-road, Brighton.
1871. Dalby, Sir William Bartlett, F.R.C.S., 18, Savile-row, W. P, c 2.
1881. Dallaway, Dennis Joseph William, L.R.C.P. Edin., Windham Club, St. James's-square, S.W. c 2.
1901. Daniel, Peter Lewis, F.R.C.S., 5, Devonshire-street, W.
1890. Davis, Henry, M.R.C.S., 60, Queen Anne-street, W.
1889. *Davison, James, M.D., "Streate Place," Bath-road, Bournemouth.
1897. Davison, Rashell, M.D., Vernham, New Malden, Surrey.
1880. Davson, Smith Houston, M.D., Campden Villa, 203, Maida-vale, W. c 3.
1868. *Davy, Richard, F.R.C.S., F.R.S.E., Burstone House, Bow, North Devon. VP, s 2, SM, § 2.
1876. Dawes, Richard St. Mark, M.R.C.S., Gawler, South Australia.
1897. Dawson, Bertrand, M.D., 110, Harley-street, W.
1880. Dawson, Yelverton, M.D., Heathland, Southbourne-on-Sea, Christchurch, Hants.
1894. Dean, Henry Percy, M.S., 69, Harley-street, W.
1883. Dent, Clinton Thomas, F.R.C.S., 61, Brook-street, Grosvenor-square, W. c 3.
1897. Des Vœux, Harold A., M.D., 14, Buckingham-gate, S.W.
1891. Diver, Ebenezer, M.D., "Garstone," St. Peter's-road, St. Margaret's, Twickenham.
1893. Dockrell, Morgan, M.D., 9, Cavendish-square, W.
1885. Dodd, Henry Work, F.R.C.S., 136, Harley-street, W.
1882. Dolan, Thomas Michael, M.D., Horton House, Halifax. FM 1882.
1881. Doran, Alban Henry Griffiths, F.R.C.S., 9, Granville-place, W. c 4, o, § 3.
1898. Douglas, John L., M.D., 42, Central-hill, Norwood, S.E.
1890. Douglas, William, M.D., 4, St. Alban's-place, Regent-street, S.W.
1871. Dowse, Thomas Stretch, M.D., 14, Welbeck-street, W. § 3, c 3.
1897. *Drage, Lovell, M.D., Hatfield, Herts.
1886. Duckworth, Sir Dyce, M.D., 11, Grafton-street, Piccadilly, W. c.
1884. Duncan, William, M.D., 6, Harley-street, W.
1884. Durham, Frederic, F.R.C.S., 52, Brook-street, W. *Councillor.*

1895. Ealand, Hugh Fawsit, L.R.C.P. Edin., The Moat, Puckeridge, Herts.
1896. Earle, Walter George, M.R.C.S., 44, Upper Grosvenor-road, Tunbridge Wells.
1899. Eastes, George Leslie, M.B., 62, Queen Anne-street, W.
1891. Eastes, Thomas, M.D., 3, Shakespeare-terrace, Folkestone.
1895. Eccles, William McAdam, M.S., 124, Harley-street, W.
1892. Eddowes, Alfred, M.D., 28, Wimpole-street, W.
1860. *Edmunds, James, M.D., 26, Manchester-square, W.
1880. Edwards, Frederick Swinford, F.R.C.S., 55, Harley-street, W. c 3.
1897. Elgood, Charles Reginald, M.D., 8, Clarence-villas, Windsor.

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1899. Elliot, Norman Bruce, F.R.C.S., 27, Warwick-square, S.W.
1868. Elliott, George Frederick, M.D., 1, Albion-street, Hull.
1882. Elliott, Thomas, M.D., Monson-place, Tunbridge Wells.
1883. English, Edgar, M.R.C.S., St. Mary's-road, Doncaster.
1880. English, Thomas Johnston, M.D., 128, Fulham-road, S.W.
1889. Esler, Robert, M.D., 4, Queen's-road, Peckham, S.E.
1899. Evans, J. Morgan, M.R.C.S., J.P., Llandrindod Wells, Radnorshire.
1894. Evans, Willmott H., F.R.C.S., 2, Upper Wimpole-street, W.
1893. Eve, Frederic S., F.R.C.S., 125, Harley-street, W.
1883. Ewart, Sir Joseph, M.D., J.P., Dep. Surgeon-General, Bengal Army (*retired*), Bewcastle, Dyke-road, Brighton. c.
1877. Ewart, William, M.D., 33, Curzon-street, Mayfair, W. c 3. *Hon. Sec. Foreign Correspondence.*

1884. Fardon, Edward Ashby, M.R.C.S., Middlesex Hospital, W.
1873. *Fayrer, Sir Joseph, Bart., K.C.S.I., LL.D., M.D., F.R.S., *Honorary Fellow* (*q. v.*).
1896. Fayrer, Joseph, M.D., Captain, R.A.M.C., India.
1898. Felkin, Robert William, M.D., 48, Westbourne-gardens, Bayswater, W.
1884. Fenton, Frederick Enos, F.R.C.S., 33, Welbeck-street, W.
1888. Fenwick, Bedford, M.D., 20, Upper Wimpole-street, W.
1885. Fenwick, Edwin Hurry, F.R.C.S., 14, Savile-row, W. c.
1887. Ferrier, David, M.D. Edin., F.R.S., 34, Cavendish-square, W. c.
1878. Field, George, M.R.C.S., 34, Wimpole-street, W. c.
1894. Fisher, Frederick Charles, F.R.C.S., King's Langley, Herts.
1876. Fisher, Frederick Richard, F.R.C.S., 18, Wimpole-street, W.
1893. Fletcher, H. Morley, M.D., 98, Harley-street, W.
1884. Flint, Arthur, M.D., J.P., Westgate Lodge, Westgate-on-Sea.
1878. *Fonmartin, Henry de, M.D., 26, Newberry-terrace, Lower Bullar-street, Southampton.
1893. Forbes, Norman Hay, F.R.C.S. Edin., J.P., "Drumminor," Tunbridge Wells.
1899. Ford, Frank Chubb, M.B., 1, Sunnyside, Wimbledon, S.W.
1879. Fowler, James Kingston, M.D., 35, Clarges-street, Mayfair, W. s 2, c 2, vp 2, o.
1873. Fox, Arthur Edward Wellington, M.B., C.M., Ennox Lodge, Hinton, Charterhouse, near Bath. c.
1887. Fox, Fortescue, M.D., Strathpeffer Spa, Ross-shire.
1871. Fox, Francis, M.R.C.S., 15, Arundel-gardens, Kensington Park, W. c 3.
1885. *Fox, R. Hingston, M.D., 20, Gordon-square, W.C.
1879. Fox, Thomas Colcott, M.B., 14, Harley-street, W. s 2, c 2.
1868. Freer, Alfred, M.R.C.S., J.P., Stourbridge, Worcestershire.
1896. Freyer, P. Johnston, M.Ch., Surgeon-Lieut.-Colonel (*retired*), 46, Harley-street, W.
1886. Frith, Baptist Gamble, M.B., Drumgay, Grove-road, Guildford.
1884. Frost, William Adams, F.R.C.S., 30, Cavendish-square, W. c 2.

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1895. GALLOWAY, JAMES, M.D., 54, Harley-street, W.
1862. *GANT, FREDERICK JAMES, F.R.C.S., *Honorary Fellow* (*q. v.*).
1899. GARDENER, WILLIAM FREDERICK, M.R.C.S., Darley House, Vennerroad, Sydenham, S.E.
1847. *GARROD, Sir ALFRED BARING, M.D., F.R.S., 10, Harley-street, W. P, VP 2, LL, O, C 9.
1893. GARSON, JOHN GEORGE, M.D., 14, Stratford-place, W.
1891. GASTER, AUGHEL, M.D., 68, Greencroft-gardens, South Hampstead, N.W.
1887. GAY, JOHN, M.R.C.S., 119, Upper Richmond-road, Putney, S.W.
1856. *GIBBON, SEPTIMUS, M.B., 39, Oxford-terrace, W.
1882 GIBBONS, ROBERT ALEXANDER, M.D., 29, Cadogan-place, S.W. *Councillor.*
1893. GIBSON, CHARLES, M.D., 5, Beech-grove, Harrogate.
1897. GIBSON, GEORGE ALEXANDER, M.D., 3, Drumsheugh-gardens, Edinburgh.
1881. GIFFARD, DOUGLAS W., M.R.C.S., 5, Pavilion-parade, Brighton.
1867. GILL, WILLIAM, M.R.C.S., 11, Russell-square, W.C. C.
1894. GILL, RICHARD, F.R.C.S., 72, Wimpole-street, W.
1900. GODFREY, THOMAS HENRY, M.B., The Red House, Church-end, Finchley, N.
1869. *GODSON, CLEMENT, M.D., 82, Brook-street, W. VP, C 3, S 2, SM.
1873. GOODSALL, DAVID HENRY, F.R.C.S., 17, Devonshire-place, Portland-place, W. VP 2. C, S 2, SM, CFC 7. *Treasurer; Chairman, House and Finance Committee.*
1878. *GOULD, ALFRED PEARCE, M.S., 10, Queen Anne-street, W. VP 2, S 2, C 4, O. *Lettsomian Lecturer.*
1896. GOW, WILLIAM JOHN, M.D., 27, Weymouth-street, W.
1876. GOWERS, Sir WILLIAM RICHARD, M.D., F.R.S., 50, Queen Anne-street, W. VP, C, SM, LL. PM. 1893.
1896. GRANT, J. DUNDAS, M.D., 18, Cavendish-square, W.
1881. GREEN, THOMAS HENRY, M.D., 74, Wimpole-street, W. C 2. VP.
1886. GREVES, EDWIN HYLA, M.D., Rodney House, Bournemouth.
1873. GRIEVE, ROBERT, M.D., C.M.G., Elloughton, Brough, E. Yorks.
1885. GRIFFITHS, CHARLES THOMAS, L.R.C.P., 125, Soho-hill, Birmingham.
1884. GRIFFITHS, HERBERT TYRRELL, M.B., 5, Kensington-square, W.
1891. GUTHRIE, LEONARD G., M.D., 15, Upper Berkeley-street, W.

1886. HABERSHON, S. HERBERT, M.D., 88, Harley-street, W.
1891. HADLEY, WILFRED J., M.D., 58, Harley-street, W. *Councillor.*
1887. HAIG, ALEXANDER, M.D., 7, Brook-street, W.
1881. HALL, CHARLES ROSS, M.R.C.S., Hatfield, Herts.
1874. *HALL, FRANCIS DE HAVILLAND, M.D., 47, Wimpole-street, W. VP 2, LL, C 7, S 2, SM.
1891. HANDFIELD-JONES, MONTAGU, M.D., 35, Cavendish-square, W.
1891. HAROLD, JOHN PATRICK, M.R.C.S., 91, Harley-street, W.

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1895. HARRISON, CHARLES JAMES, M.D., Rossetti-mansions, Chelsea, S.W.
1871. HARRISON, REGINALD, F.R.C.S., 6, Lower Berkeley-street, Portman-square. P, VP 2, LL, C 2.
1883. *HARTRIDGE, GUSTAVUS, F.R.C.S., 12, Wimpole-street, W.
1882. HARVEY, JOHN STEPHENSON SELWYN, M.D., 1, Astwood-road, Cromwell-road, S.W.
1882. HASLAM, WILLIAM FREDERICK, F.R.C.S., 8, Vicarage-road, Edgbaston, Birmingham. C 3.
1901. HASLIP, GEORGE ERNEST, M.D., 6, Northumberland-avenue, W.C.
1852. *HAWARD, EDWIN, M.D., 34A, Gloucester-place, W.
1898. HAYDON, ARTHUR GEORGE, M.D., 17, Essex-road, Horn-lane, Acton, W.
1897. HAYMAN, ALBERT STEPHEN, L.R.C.P., 45, Welbeck-street, W.
1899. HAYS, ALEXANDER GLENCORSE, L.R.C.P., Eydon, Byfield, Northamptonshire.
1890. HEBB, FREDERICK THEODORE, M.R.C.S., 98, Oakley-street, Chelsea-embankment, S.W.
1897. HEDLEY, WILLIAM SNOWDON, M.D., 8, Mansfield-street, W.
1891. HENSMAN, FRANK, M.R.C.S., Lieut.-Colonel, R.A.M.C., Underhill, Sandgate, Kent.
1883. HERMAN, GEORGE ERNEST, M.B., 20, Harley-street, W. C.
1879. HERON, GEORGE ALLAN, M.D., 57, Harley-street, Cavendish-square, W. C 3.
1883. HERSCHELL, GEORGE A., M.D., 76, Wimpole-street, W.
1883. HEWITT, FREDERICK WILLIAM, M.D., 14, Queen Anne-street, W. C.
1892. HILL, WILLIAM, M.D., 26, Weymouth-street, W.
1873. HOBSON, WILLIAM HENRY, M.R.C.S., 38, Leinster-gardens, Hyde Park, W.
1895. HODGSON, GEORGE G. GRAHAM, M.R.C.S., The Cedars, Chertsey, Surrey.
1879. HOGG, ARTHUR JOHN, M.R.C.S., Leslie Lodge, Haven-green, Ealing, W.
1884. HOLLAND, CHARLES EDWARD, M.B., "Airdrie," The Avenue, Kew Gardens, Surrey.
1863. HOLMAN, CONSTANTINE, M.D., 26, Gloucester-place, Portman-square, W. VP 2, C 5.
1897. HOLROYDE, JOHN, M.R.C.S., Camden House, Chatham.
1881. HOOD, DONALD WILLIAM CHARLES, C.V.O., M.D., 43, Green-street, W. C 2.
1896. HORSLEY, VICTOR, F.R.C.S., F.R.S., 25, Cavendish-square, W. FM 1896.
1883. *HOVELL, T. MARK, F.R.C.S. Edin., 105, Harley-street, W.
1899. HUBBARD, ARTHUR JOHN, M.D., 69, Barrowgate-road, Chiswick, W.
1864. HUME, FREDERICK HENRY, M.D., 53, Devonshire-street, Islington, N.
1889. HUNTER, WILLIAM, M.D., 103, Harley-street, W.
1881. HUTCHINSON, JONATHAN, F.R.C.S., F.R.S., 15, Cavendish-square. P, LL, C 5, O.

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1892. HUTCHINSON, JONATHAN, Jun., F.R.C.S., 1, Park-crescent, Portland-place, W. *Hon. Secretary.*
1875. HUTCHINSON, SAMUEL JOHN, M.R.C.S., 64, Brook-street, W.
1897. HUTCHISON, ROBERT, M.D., Toynbee Hall, Commercial-road, E.

1889. I'ANSON, WILLIAM ANDREW, M.R.C.S., Denton Hall, Newcastle-on-Tyne.
1891. ISAAC, G. WASHINGTON, M.B., 75, Gower-street, W.C. c. 2.

1884. *JACKSON, FREDERICK WILLIAM, M.D., Yorkgate House, Broadstairs.
1868. JACKSON, JOHN HUGHLINGS, M.D., F.R.S., 3, Manchester-square, W. P, VP, O, C 5.
1899. JACOBS, HENRY RALPH, M.R.C.S., 5, Hollis-road, Northampton.
1898. JAFFREY, FRANCIS, F.R.C.S., 33, Nottingham-place, W.
1884. *JENNINGS, CHARLES EGERTON, M.D., Burke House, Beaconsfield, Bucks.
1886. JERVIS, ARTHUR, M.D., Pailton Hall, Rugby.
1883. JESSOP, WALTER HAMILTON, F.R.C.S., 73, Harley-street, W. *Councillor.*
1886. JOHNSTON, JAMES, M.D., 53, Prince's-square, Bayswater, W.
1893. JOLL, BOYD BURNETT, M.B., 27, Bedford-square, W.C.
1899. JONES, E. J. TREVOR, M.D., Ty-mawr, Aberdare, S. Wales.
1893. JONES, HENRY LEWIS, M.D., 61, Wimpole-street, W.
1890. JONES, H. MACNAUGHTON, M.D., 131, Harley-street, Cavendish-square, W.
1888. JONES, JOHN TALFOURD, M.B., St. David's, 1, Lascelles Terrace, Eastbourne, Sussex.
1892. *JONES, ROBERT, F.R.C.S., 11, Nelson-street, Liverpool.
1896. JONES, ROBERT, M.D., Claybury Asylum, Woodford Bridge, Essex.
1893. JOULE, JOHN SAMUEL, M.D., 32, Maida-hill West, W.
1877. JULER, HENRY EDWARD, F.R.C.S., 23, Cavendish-square, W. C 2.

1889. KAUFFMANN, OTTO JACKSON, M.D., 22, Broad-street, Birmingham.
1891. KEEGAN, DENIS FRANCIS, M.D., Brigade Surgeon-Lieutenant-Colonel, East India United Service Club, St. James's-square, S.W.
1896. KEEP, A. CORRIE, M.C., 14, Gloucester-place, Portman-square, W.
1884. KEETLEY, CHARLES BELL, F.R.C.S., 56, Grosvenor-street, W. C 3.
1899. KELLOCK, THOMAS HERBERT, F.R.C.S., 8, Queen Anne-street, W.
1847. *KELLOCK, WILLIAM BERRY, M.D., 94, Stamford-hill, N.
1891. KELSON, WILLIAM HENRY, M.D., 16, Old Burlington-street, W.
1901. KELYNACK, T. N., M.D., 53, Harley-street, W.
1890. KER, HUGH RICHARD, F.R.C.S. Edin., Tintern, 2, Balham-hill, S.W.
1895. KING, ARTHUR, M.B., Belmont, Station-road, Watford, Herts.
1897. KINGSCOTE, ERNEST, M.B., 31, Lower Seymour-street, W.
1883. KNAPTON, GEORGE, L.R.C.P. Edin., Craven House, Moss-lane, Manchester.

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1898. Lack, H. Lambert, M.D., 48, Harley-street, W.
1889. Lake, Richard, F.R.C.S., 19, Harley-street, W.
1895. Lane, James Ernest, F.R.C.S., 46, Queen Anne-street, W.
1881. Langton, John, F.R.C.S., 62, Harley-street, W. c 2.
1890. Law, Edward, M.D. Edin., 8, Wimpole-street, W.
1858. *Lawson, George, F.R.C.S., 12, Harley-street, W. vp 2, c 3.
1893. Lee, E. Samuel, M.D., 31, Pevensey-road, St. Leonards-on-Sea.
1887. Leggatt, Charles Ashley Scott, M.D., 2, Walton-place, S.W.
1894. Lendon, Edwin Harding, M.D., 162, Holland Park-avenue, W.
1886. Lewers, Arthur Hamilton Nicholson, M.D., 72, Harley-street, W.
1895. Lewis, Ernest Wool, M.R.C.S., 12, King-street, Hammersmith, W.
1898. Ling, Maurice Edward, M.D., 5, West Halkin-street, S.W.
1901. Linington, William West, F.R.C.S., 1, Radnor Park-avenue, Folkestone.
1878. Lister, the Right Hon. Lord, D.C.L., LL.D., F.R.C.S., F.R.S., 12, Park-crescent, Portland-place, W. o.
1896. Lister, Thomas D., M.D., 50, Brook-street, W.
1889. Little, Ernest Muirhead, F.R.C.S., 40, Seymour-street, Portman-square, W.
1889. Little, Fletcher, M.D., 32, Harley-street, W.
1878. Lockwood, Charles Barrett, F.R.C.S., 19, Upper Berkeley-street, W. vp 2, c 2, s 2.
1873. Loe, James Scarborough, M.R.C.S., Grange-avenue, Chapeltown-road, Leeds.
1881. Lorimer, G., M.D., 9, Terrace-road, Buxton, Derbyshire.
1899. Low, Richard Marsden Pilkington, M.B., 70, Philbeach-gardens, S.W.
1899. Low, Vincent Warren, F.R.C.S., 27, Queen Anne-street, W.
1897. Luff, Arthur Pearson, M.D., 31, Weymouth-street, W.
1889. Lush, Percy, M.B., 4, Maresfield-gardens, Hampstead, N.W.
1899. Lynes, John, M.R.C.S., 2, Argyll-road, Kensington, W.

1884. MacBryan, Henry Crawford, L.R.C.P. Edin., Kingsdown House, Box, Wilts.
1894. McCann, Frederick John, M.B., 5, Curzon-street, Mayfair, W.
1885. McConnel, Henry Wilson, M.B., Great Ryburgh, Fakenham, Norfolk.
1871. *MacCormac, Sir William, Bart., K.C.B., K.C.V.O., F.R.C.S. *Honorary Fellow* (*q. v.*).
1900. McEnery, William Augustine, M.R.C.S., Redstone House, Sherborne, Dorset.
1885. MacGeagh, Thomas Edwin Foster, M.D., 23, New Cavendish-street, W.
1896. Macgregor, Patrick Fraser, M.D., "Ashley," Cambridge Park, Wanstead, Essex.
1873. McHardy, Malcolm Macdonald, F.R.C.S. Edin., 5, Savile-row, W.
1894. Mackenzie, Hector William Gavin, M.D., 34, Upper Brook-street, W. c.

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1880. MACKENZIE, STEPHEN, M.D., 18, Cavendish-square, W. VP 2, C 4, LL. *Orator.*
1881. MACLAGAN, THOMAS JOHN, M.D., 9, Cadogan-place, S.W. C 3.
1861. *MACLAREN, ALEXANDER CONNELL, 60, Harley-street, W.
1891. MACLEAN, ALLAN, L.S.A., Friern-road, East Dulwich, S.E.
1901. MACLEOD, C. E. ALEXANDER, F.R.C.S., 76, Ladbroke-grove, W.
1900. MACLEOD, HERBERT WILLIAM GEORGE, M.D., "The Turret," 28, High-road, Streatham, S.W.
1887. MACREADY, JONATHAN FOSTER CHRISTIAN HORACE, F.R.C.S., 42, Devonshire-street, W. C 2.
1883. MADDICK, EDMUND DISTIN, F.R.C.S. Edin., 31, Cavendish-square, W.
1885. MAGUIRE, ROBERT, M.D., 4, Seymour-street, W. C 5, S 2.
1893. MAHOMED, ARTHUR GEORGE SULIEMAN, M.R.C.S., Astolat, Poole-road, Bournemouth.
1890. MALCOLM, JOHN DAVID, F.R.C.S. Edin., 13, Portman-street, Portman-square, W.
1893. MALCOLM, WILLIAM A., M.B., Oak House, 421, Holloway-road, N.
1887. MANTLE, ALFRED, M.D., Savile-place, Halifax.
1888. MAPOTHER, EDWARD DILLON, M.D., 32, Cavendish-square, W. C 3.
1898. MARRIOTT, CHARLES WILLIAM, M.D., Aubrey House, Bath-road, Reading.
1891. MARSH, HOWARD, F.R.C.S., 30, Bruton-street, W.
1869. MARSHALL, WILLIAM, M.D., Torrieburn, Barnes, S.W. C.
1889. MARTIN, JOHN MICHAEL HARDING, M.D., Arnheim, Blackburn, Lancashire.
1890. MARTIN, SIDNEY, M.D., F.R.S., 10, Mansfield-street, W. C. *Hon. Librarian.*
1893. MASON, GEORGE ARMSTRONG, M.B., 45, George-street, Portman-square, W.
1891. MAUDE, ARTHUR, M.R.C.S., Winterton House, Westerham, Kent.
1892. MAY, CHICHESTER GOULD, M.D., 59, Cadogan-place, S.W.
1891. MAY, WILLIAM PAGE, M.D., 49, Welbeck-street, W.
1884. MEREDITH, WILLIAM APPLETON, F.R.C.S., 21, Manchester-square, W. C.
1897. MILES, WILLIAM ERNEST, F.R.C.S., 17, Devonshire-place, Portland-place, W.
1901. MILLS, HERBERT HENRY, M.B., St. Mary Abbott's-terrace, Kensington, W.
1895. MONIER-WILLIAMS, MONTAGU SNEADE FAITHFULL, M.R.C.S., 54, Onslow-gardens, S.W.
1883. MORGAN, JOHN HAMMOND, C.V.O., F.R.C.S., 68, Grosvenor-street, W. P, VP 2, LL, S 2, C 2. *Councillor.*
1899. MORIER, C. G. DRUMMOND, L.R.C.P.I., 1, Hamilton-terrace, N.W.
1893. MORISON, ALEXANDER, M.D., 14, Upper Berkeley-street, W.
1871. MORLEY, ALEXANDER, 42, Albemarle-street, W. C.
1895. MORLEY, FRANK, M.R.C.S., 42, Albemarle-street, W.
1881. MORRIS, HENRY, F.R.C.S., 8, Cavendish-square, W. C.

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1878. MORRIS, MALCOLM ALEXANDER, F.R.C.S. Edin., 8, Harley-street, W. c 2.
1882. MORTON, ANDREW STANFORD, F.R.C.S., 133, Harley-street, W.
1884. *MOULLIN, CHARLES WILLIAM MANSELL, F.R.C.S., 69, Wimpole-street, W. c. *Councillor.*
1899. MULLICK, SARAT KUMAR, M.B., 27, New Cavendish-street, W.
1894. MURRAY, CHARLES STORMONT, L.R.C.S. Edin., 85, Gloucester-place, W.
1884. MURRAY, FRED., M.B., Durbanville, Cape Colony, South Africa.
1890. MURRAY, GEORGE, M.R.C.S., 34, Wimpole-street, Cavendish-square, W.
1886. MURRAY, HUBERT MONTAGUE, M.D., 25, Manchester-square, W. c 3.
1879. MURRELL, WILLIAM, M.D., 17, Welbeck-street, W.

1894. NAUMANN, J. C. FRANCIS, M.D., 125, Gower-street, W.C.
1889. *NIAS, J. BALDWIN, M.D., 5, Rosary-gardens, South Kensington, S.W. c 3.
1880. NIX, EDWARD JAMES, M.D., 11, Weymouth-street, W. c 3.

1887. OAKLEY, ADAM ROBERT HAMILTON, L.R.C.P.
1898. O'BRIEN, CHRISTOPHER, M.D., 57, Amiens-street, Dublin.
1894. O'CALLAGHAN, ROBERT, F.R.C.S.I., 137, Harley-street, W.
1884. OGLE, CHARLES JOHN, M.R.C.S., 1, Cavendish-place, W.
1884. OLIVER, GEORGE, M.D., West End Park, Harrogate.
1892. OPENSHAW, THOMAS HORROCKS, F.R.C.S., 16, Wimpole-street, W.
1899. ORD, GEORGE WILLIAM, M.R.C.S., 58, Queen's-road, Richmond, Surrey.
1875. ORD, WILLIAM MILLER, M.D., The Dean, Hurstbourne-Tarrant, Andover, Hants. P, O, c 4.
1892. ORD, WILLIAM WALLIS, M.D., The Hall, Salisbury.
1887. ORMEROD, JOSEPH ARDERNE, M.D., 25, Upper Wimpole-street, W. c.
1889. ORTON, GEORGE HUNT, M.B., 1A, Campden Hill-road, Kensington, W.
1894. OSBORN, SAMUEL, F.R.C.S., J.P., 1A, Devonshire-street, Portland-place, W.
1880. OSWALD, JAMES WADDELL JEFFREYS, M.D., 245, Kennington-road, S.E. c 3.
1901. OWEN, ARTHUR D., M.R.C.S., Enkeldoorn, Rhodesia, South Africa.
1883. OWEN, CHARLES J. RAYLEY, M.R.C.S., 14, Devonshire-terrace, Hyde Park, W. c.
1878. *OWEN, EDMUND, F.R.C.S., 64, Great Cumberland-place, W. P, O, VP 2, C 3, S 2, SM, LL. *Trustee.*
1881. OWEN, ISAMBARD, M.D., 40, Curzon-street, Mayfair, W. S 2, C 4. *Vice-President.*

1880. PALMER, FREDERICK STEPHEN, M.D., 7, Gordon-place, Gordon-square, W.C. *Councillor.*
1882. PALMER, WILLIAM PITT, M.B., Kirkham, Babbacombe, Torquay.
1877. *PARAMORE, RICHARD, M.D., 2, Gordon-square, W.C.
1881. PARROTT, EDWARD JOHN, M.R.C.S., The Thorn, Hayes, Middlesex.

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1871. PARSONS, FRANCIS HENRY, M.D., "The Hurst," West Worthing.
1885. PASTEUR, WILLIAM, M.D., 4, Chandos-street, Cavendish-square, W. s 2, c. 2. *Trustee.*
1891. PATTERSON, CHARLES SUMNER, M.B., 47, Clarendon-road, Holland-park, W.
1890. PATTISON, EDWARD SETON, M.R.C.S., Granville House, Fulham-road, S.W.
1854. *PAVY, FREDERICK WILLIAM, M.D., F.R.S., 35, Grosvenor-street, W. VP, LL, C.
1881. *PEACEY, WILLIAM, M.D., Rydal Mount, St. John's-road, Eastbourne.
1883. PECK, EDWARD GEORGE, M.A., The Willows, Queensbury, Bradford, Yorks.
1871. PEDLER, GEORGE HENRY, M.R.C.S., 6, Trevor-terrace, Knightsbridge, S.W.
1883. PERIGAL, ARTHUR, M.D., New Barnet, Herts.
1878. PHILIPPS, SUTHERLAND REES, M.D., 2, Berkeley-place, Cheltenham.
1894. PHILLIPPS, WILLIAM ALFRED, M.D., 13, John-street, Berkeley-square, W.
1876. PHILLIPS, CHARLES DOUGLAS FERGUSON, M.D., F.R.S.E., 10, Henrietta-street, Cavendish-square, W. c 3.
1873. PHILLIPS, GEORGE RICHARD TURNER, M.R.C.S., 24, Palace-court, Bayswater-hill, W. c 2.
1883. PHILLIPS, SIDNEY PHILIP, M.D., 62, Upper Berkeley-street, Portman-square, W. *Councillor.*
1883. PITTS, BERNARD, F.R.C.S., 109, Harley-street, Cavendish-square. c 5, s 2.
1899. POORE, GEORGE VIVIAN, M.D., 24A, Portland-place, W.
1890. POPE, HARRY CAMPBELL, M.D., 280, Goldhawk-road, Shepherd's Bush, W. c. *Councillor.*
1871. POWELL, Sir RICHARD DOUGLAS, Bart., K.C.V.O., M.D., 62, Wimpole-street, W. P, VP, c 5, c.
1891. POWELL, WILLIAM WYNDHAM, F.R.C.S., 16, Old Burlington-street, W.
1891. PRESTON, THEODORE JULIAN, M.R.C.S., Fleet Surgeon, Royal Navy, 238, Portsdown-road, Maida Vale, W.
1891. *PRICKETT, MARMADUKE, M.D., 27, Oxford-square, W.
1885. PRINGLE, JOHN JAMES, M.B., 23, Lower Seymour-street, W.
1889. PRITCHARD, OWEN, M.D., 41, Gloucester-square, W.
1898. PROBYN-WILLIAMS, ROBERT JAMES, M.D., 13, Welbeck-street, W.

1892. RAMSAY, JAMES, M.D., High Peter-gate, York.
1894. RANKIN, GUTHRIE, M.D., 4, Chesham-street, Belgravia, S.W.
1881. RANKING, JOHN EBENEZER, M.D., Hanover House, Tunbridge Wells.
1894. RAYNER, HERBERT EDWARD, F.R.C.S., 103, Sutherland-avenue, Maida Vale, W.
1859. *RAYNER, JOHN, M.D., Swaledale House, Highbury-quadrant, N.
1890. REID, JOHN, M.B., Albert-road, Buckhurst Hill, Essex.

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1882. Reid, Thomas Whitehead, M.D., 34, St. George's-place, Canterbury.
1872. *Richards, Joseph Peeke, M.R.C.S., 6, Freeland-road, Ealing, W. c 3.
1893. Richardson, Sidney William F., F.R.C.S., Somerset Hospital, Cape Town.
1868. *Roberts, David Lloyd, M.D., F.R.S.E., 11, St. John's-street, Manchester.
1857. *Roberts, David Watkin, M.D., 56, Manchester-street, W.
1885. Roberts, Edward Coleridge, M.R.C.S., Southgate, N.
1874. Roberts, Frederick Thomas, M.D., 102, Harley-street, W. P, VP 2, O, LL, C 2.
1884. Robinson, Arthur Henry, M.D., St. Mary's Infirmary, Highgate-hill, N.
1897. Robinson, Henry Betham, M.S., 1, Upper Wimpole-street, W.
1896. Robson, A. Mayo, F.R.C.S., 7, Park-square, Leeds.
1897. Rolleston, Humphry Davy, M.D., 55, Upper Brook-street, W. C 3.
1890. Root, Arthur Guernsey, M.D., 46, Eagle-street, Albany, New York, U.S.A.
1886. Rose, Robert Duncan, F.R.C.S., 8, St. Leonards, York.
1874. Rose, William, F.R.C.S., 17, Harley-street. C 2, LL, VP 2.
1883. *Ross, Daniel McClure, M.D., Cedar Lodge, Littledown-road, Bournemouth.
1888. *Roth, Bernard, F.R.C.S., J.P., 38, Harley-street, W.
1893. Roughton, Walter, F.R.C.S., Cranborne House, New Barnet, Herts.
1881. *Routh, Amand, M.D., 14A, Manchester-square, W. C 5, S 2.
1848. *Routh, Charles Henry Felix, M.D., 52, Montagu-square, W. P, VP 2, O, LL, S 4, C 6, SM. *Trustee.*
1891. Ruffer, Marc Armand, M.D., Quarantine Board, Alexandria, Egypt.
1887. Rushworth, Frank, M.D., "Langdale," Goldhurst-terrace, South Hampstead, N.W.
1889. Russell, James Samuel Risien, M.D., 4, Queen Anne-street, W.
1886. Rutherfoord, Henry Trotter, M.D., Salisbury House, Taunton.

1887. Sainsbury, Harrington, M.D., 52, Wimpole-street, W.
1863. *Sansom, Arthur Ernest, M.D., 84, Harley-street, W. P, VP, S 2, C 6, SM, §, LL, O.
1895. Sansom, Charles Lane, F.R.C.S. Edin., 19, Cumberland-place, Southampton.
1897. Sansom, Harry Arthur, M.D., The Glen, West-end-lane, West Hampstead, N.W.
1886. Savage, George Henry, M.D., 3, Henrietta-street, W. C.
1886. Savill, Thomas Dixon, M.D., 60, Upper Berkeley-street, W.
1899. Sayres, Alexander Ward Fortescue, M.D., Lansdown House, Solway-hill, Woodford Green, N.E.
1899. Schorstein, Gustave, M.B., 11, Portland-place, W.

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1873. SEDGWICK, JAMES, M.D., The Firs, Copse-hill, Wimbledon.
1868. SEDGWICK, LEONARD WILLIAM, M.D., 69, Gloucester-terrace, Hyde Park, W. VP 2, C 4, § 3.
1899. SEGUNDO, CHARLES SEMPILL DE, M.B., 6, Brook-street, Hanover-square, W.
1883. SEMON, Sir FELIX, M.D., 39, Wimpole-street, W. §, C.
1887. SERVAIS, LEOPOLD, M.D., Antwerp, Belgium.
1889. SHAW, GEORGE, M.B., 1, The Drive, West Brighton.
1884. SHAW, JOHN, M.D., 32, New Cavendish-street, Cavendish-square, W.
1886. SHEILD, ARTHUR MARMADUKE, F.R.C.S., 4, Cavendish-place, W. C 2, S 2.
1890. SHEPPARD, WILLIAM JOHN, M.D., 211, Upper Richmond-road, Putney, S.W.
1885. SHOEMAKER, JOHN V., M.D., 1031, Walnut-street, Philadelphia, U.S.A.
1894. SHUTTLEWORTH, GEORGE EDWARD, M.D., Ancaster House, Richmond, Surrey.
1890. SILK, JOHN FREDERICK WILLIAM, M.D., 47, Devonshire-street, W.
1884. SIMPSON, JAMES HERBERT, M.D., Hillmorton-road, Rugby, Warwickshire.
1898. SIMPSON, JOHN POLLOCK, M.D., 1, Blandford-street, Manchester-square, W.
1884. SINCLAIR, JOHN, M.R.C.P., General Post Office, St. Martin's-le-Grand, E.C.
1891. SISLEY, RICHARD, M.D. *Travelling.*
1883. *SKERRITT, EDWARD MARKHAM, M.D., Richmond Hill, Clifton.
1886. SLATER, CHARLES, M.B., 81, St. Ermin's-mansions, Westminster, S.W.
1862. SLIGHT, GEORGE, M.D., 14, Old Burlington-street, W. C 2.
1889. SMALE, MORTON, M.R.C.S., 22A, Cavendish-square, W. C 3.
1845. *SMILES, WILLIAM, M.D., St. Martha's Lodge, Guildford. VP 2, S 4, C 9, SM.
1897. SMITH, A. LIONEL H., M.R.C.S., Addenbrooke's Hospital, Cambridge.
1896. SMITH, E. STANLEY, M.D., 68, Wimpole-street, W.
1887. *SMITH, FREDERICK JOHN, M.D., 138, Harley-street, W. C 2.
1873. SMITH, HEYWOOD, M.D., 18, Harley-street, W. C 3.
1880. SMITH, NOBLE, F.R.C.S. Edin., 24, Queen Anne-street, W.
1891. SMITH, SOLOMON CHARLES, M.D., Four Oaks, Walton-on-Thames.
1877. SMITH, SYDNEY LLOYD, M.R.C.S., 25, Argyle-square, King's Cross, W.C.
1882. SMITH, THOMAS FREDERICK HUGH, F.R.C.S., Farningham, Kent.
1873. *SMITH, THOMAS GILBART, M.D., 68, Harley-street, W. VP 2, S 2, SM C 4. *Trustee.*
1872. SMITH, WALTER, M.R.C.P. Edin., Orleans House, 60, Regent's Park-road, N.W.
1899. SMITHSON, OLIVER, M.R.C.S., Moor-street, Luton, Beds.
1874. SMYTH, WILLIAM WOODS, L.R.C.P. Edin., Maidstone.
1894. SNAPE, ERNEST ALFRED, M.D., 89, Welbeck-street, W.
1893. SPENCER, HERBERT RITCHIE, M.D., 104, Harley-street, W. C.

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1901. SPENCER, WALTER GEORGE, M.S., 35, Brook-street, W.
1887. SPICER, SCANES, M.D., 28, Welbeck-street, W.
1883. SPITTA, EDMUND JOHNSON, M.R.C.S., Ivy House, 31, South Side, Clapham Common, S.W.
1864. SQUIRE, ALEXANDER JOHN BALMANNO, M.B., 24, Weymouth-street, Portland-place.
1881. STARTIN, JAMES, M.R.C.S., 15, Harley-street, W.
1892. STAVELEY, WILLIAM H. C., F.R.C.S., 13, South Eaton-place, S.W.
1896. STEELE-PERKINS, GEORGE CHAPMAN, M.D., 85, Wimpole-street, W.
1884. STEPHENS, WILLIAM JOHN, L.R.C.P., 25, Clermont-terrace, Preston, Brighton.
1901. STEWART, HUGH MILTON, M.D., Walton House, Lordship-lane, S.E.
1882. STEWART, JAMES, F.R.C.P. Edin., Dunmurry, Sneyd Park, near Clifton.
1894. STEWART, KENNETH TREVOR, M.D., 26, Manchester-square, W.
1883. STEWART, WILLIAM ROBERT HENRY, F.R.C.S. Edin., 42, Devonshire-street, Portland-place, W.
1884. STIVEN, EDWARD WINNAN FLEMING, M.D., Lincoln House, Harrow, Middlesex.
1885. STIVENS, B. H. LYNE, M.D., 107, Park-street, Grosvenor-square, W.
1848. *STOCKER, JOHN SHERWOOD, M.D., 2, Montagu-square, W. c 10, s 2.
1884. STOKER, GEORGE, C.M.G., M.R.C.S., J.P., 14, Hertford-street, Mayfair, W.
1892. STONHAM, CHARLES, C.M.G., F.R.C.S., 4, Harley-street, W.
1877. STOWERS, JAMES HERBERT, M.D., 128, Harley-street, W.
1873. STRANGE, WILLIAM HEATH, M.D., 2, Belsize-avenue, Hampstead, N.W. c 3.
1881. STURGE, WILLIAM ALLEN, M.D., Maison Malausséna, Boulevard Dubouchage 29, Nice. SM.
1889. SUMPTER, WALTER JOHN ERNELY, M.R.C.S., Sheringham, Norfolk.
1892. SUNDERLAND, SEPTIMUS, M.D., 11, Cavendish-place, W.
1896. SWANTON, JAMES HUTCHINSON, M.D., 40, Harley-street.
1892. SWIFT, WILLIAM JOHN CROPLEY, M.R.C.S., 4, Gordon-square, W.C.
1885. *SYERS, HENRY WALTER, M.D., 75, Wimpole-street, W.
1884. SYMONDS, HORATIO PERCY, F.R.C.S., 35, Beaumont-street, Oxford.
1893. SYMONDS, CHARTERS JAMES, F.R.C.S., 58, Portland-place, W. c.
1899. *SYMPSON, EDWARD MANSEL, M.D., Deloraine Court, Lincoln.

1864. TAIT, EDWARD WILMSHURST, M.R.C.S., 10, Ellerdale-road, Hampstead, N.W.
1875. TAMPLIN, CHARLES HARRIS, M.R.C.S., 17, Paragon, Ramsgate.
1882. TAYLOR, SEYMOUR, M.D., 16, Seymour-street, Portman-square, W. c 2.
1897. TEMPLETON, GEORGE, F.R.C.S., 10, Seymour-street, Portman-square, W.
1898. THOMAS, JOHN LYNN, C.B., F.R.C.S., 28, Charles-street, Cardiff.
1859. *THOMPSON, EDMUND SYMES, M.D., 33, Cavendish-square, W. VP, O, s 3, c 3, SM.

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1855. *Thompson, Sir Henry, Bart., F.R.C.S., 35, Wimpole-street, W. vp, ll, c 4.
1900. Thompson, Henry E. Symes, M.R.C.S., 33, Cavendish-square, W.
1896. Thompson, Henry George, M.D., 86, Lower Addiscombe-road, Croydon, Surrey.
1895. Thompson, James Andrew Baird, M.D., White Hall, Abridge, Essex.
1873. Thomson, John Roberts, M.D., Monkchester, Bournemouth, Hants.
1894. Thomson, St. Clair, M.D., 28, Queen Anne-street, W.
1898. Thorne, Atwood, M.B., 10, Nottingham-place, W.
1899. Thorne, W. Bezly, M.D., 53, Upper Brook-street, W.
1897. Thornton, Bertram, M.R.C.S., J.P., Berkeley Lodge, Trinity-square, Margate.
1892. Thornton, George, M.D., Pretoria Hospital, Pretoria, South Africa.
1876. Thornton, John Knowsley, M.C., J.P., Hildersham Hall, Cambs. p, vp, c 3.
1884. Thursfield, Thomas William, M.D., J.P., Selwood, Beauchamp-square, Leamington.
1865. Travers, William, M.D., 2, Phillimore-gardens, Kensington, W.
1897. Tresilian, Frederick James, M.D., Redlingtons, Enfield.
1884. *Treves, Sir Frederick, C.B., K.C.V.O., F.R.C.S., 6, Wimpole-street, W. c 3, ll, vp 2.
1899. Tubby, Alfred Herbert, M.S., 25, Weymouth-street, W.
1898. Tucker, E. F. Gordon, M.R.C.S., Indian Medical Service, care of Messrs. H. King and Co., 45, Pall Mall, S.W.
1882. Tuke, Charles Molesworth, M.R.C.S., Chiswick House, Chiswick.
1886. Tuke, Thomas Seymour, M.B., Chiswick House, Chiswick.
1884. Turner, George R., F.R.C.S., 41, Halfmoon-street, Piccadilly, W. vp 2, s 2, c 4. *Councillor.*
1890. Tweed, Edward Reginald, M.D., Hembury Fort, Honiton, Devon.
1883. Tweedy, John, F.R.C.S., 100, Harley-street, W. c.
1891. Tyson, William Joseph, M.D., 10, Langhorne-gardens, Folkestone.

1887. *Underwood, Edward T., M.D., Fort Bombay, India.

1897. Vassie, Alexander Henry, M.B., 98, Priory-road, West Hampstead, N.W
1883. Venning, Edgcombe, F.R.C.S., 30, Cadogan-place, S.W.
1899. Vise, Christopher, M.D., 39, Mount Pleasant-road, Tunbridge Wells.
1893. Voelcker, Arthur Francis, M.D., 31, Harley-street, W. c. *Hon. Secretary.*

1892. Waggett, Ernest Blechynden, M.B., 45, Upper Brook-street, W.
1850. *Waggett, John, M.D., Perivale, Bournemouth.
1884. Wakley, Thomas, Jun., L.R.C.P. Lond., 5, Queen's-gate, S.W.
1850. *Wakley, Thomas Henry, F.R.C.S., 5, Queen's-gate, S.W.
1898. Wallace, Cuthbert Sidney, F.R.C.S., St. Thomas's Hospital, S.E.

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1894. WALLIS, FREDERICK CHARLES, F.R.C.S., 107, Harley-street, W. s 2, c. *Councillor.*

1901. WALSHAM, HUGH, M.D., 114, Harley-street, W.

1880. WALSHAM, WILLIAM JOHNSON, F.R.C.S., 77, Harley-street, W. c.

1895. WALTERS, FREDERICK R., M.D., 21, Wimpole-street, W.

1899. WARD-HUMPHREYS, GEORGE HERBERT, M.R.C.S., 9, Cavendish-place, W.

1894. WARING, HOLBURT JACOB, F.R.C.S., 9, Upper Wimpole-street, W.

1899. WASHBOURN, JOHN WICKENFORD, C.M.G., M.D., 6, Cavendish-place, W.

1894. WATERHOUSE, HERBERT FURNIVALL, F.R.C.S., 81, Wimpole-street, W. c. *Councillor.*

1883. WATERHOUSE, WILLIAM DAKIN, LL.D., 50, West-end-lane, West Hampstead, N.W. c.

1889. WAUGH, HENRY DUNN, M.D., 6, Sumner-place, Onslow-square, S.W.

1884. WEBB, F. ERNEST, M.R.C.S., 113, Maida-vale, W.

1896. WEBER, FREDERICK PARKES, M.D., 19, Harley-street, W.

1889. WEBER, Sir HERMANN, M.D., 10, Grosvenor-street, W.

1901. WEEKES, HENRY HOLMAN, M.D., Mansion House, Old Brompton, Chatham.

1898. WEEKS, COURTENAY CHARLES, M.R.C.S., 9, Lewisham-park, S.E.

1838. *WELLS, JOHN ROBINSON, F.R.C.S., 4, Pierrepoint-road, Acton, W. c 2.

1884. WEST, SAMUEL, M.D., 15, Wimpole-street, W. VP 2, s 2, c 4, CFC, LL. *Councillor.*

1889. WETHERED, FRANK JOSEPH, M.D., 83, Harley-street, W.

1892. WHEATON, SAMUEL WALTON, M.D., 76, The Chase, Clapham Common, S.W.

1882. WHIPHAM, THOMAS T., M.D., 11, Grosvenor-street, W. SM, c. *Vice-President.*

1899. WHITE, CHARLES PERCIVAL, M.B., 22, Cadogan-gardens, S.W.

1889. WHITE, EDWIN F., F.R.C.S., Westlands, 280, Upper Richmond-road, Putney, S.W. *Councillor.*

1880. *WHITE, WILLIAM HENRY, M.D., 43, Weymouth-street, W. c. 3.

1883. WHITEHEAD, WALTER, F.R.C.S. Edin., F.R.S.E., 499, Oxford-road, Manchester. c.

1885. WHITLA, WILLIAM, M.D., 8, College-square North, Belfast, Ireland.

1877. WHITMORE, WILLIAM TICKLE, F.R.C.S. Edin., 61, Clifton-terrace, Brighton.

1898. WILLEY, F. INGOR, M.B., The Wych, 8, Avenue-road, Highgate, N.

1872. WILLIAMS, CHARLES THEODORE, M.D., 2, Upper Brook-street, Grosvenor-square, W. P, VP 2, LL, s 2, SM, O, L 3, c 9.

1876. WILLIAMS, HENRY WILLIAM, M.D., Hillside, Guilsborough, Northampton.

1883. WILLIAMS, Sir JOHN, Bart., M.D., 63, Brook-street, W. c 3.

1900. WILLOCK, EDWARD HULSE, M.R.C.S., 113, London-road, Croydon.

1873. WILLS, THOMAS MUNNS, F.R.C.S.I., J.P., 44, Morton-road, Bootle, Liverpool.

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1893. WILLS, WILLIAM ALFRED, M.D., 29, Lower Seymour-street, W.
1892. WILSON, CLAUDE, M.D., Belmont, Tunbridge Wells.
1901. WILSON, JOHN CLARK, M.D., 22, Hilgrove-road, South Hampstead, N.W.
1884. WINSLOW, H. FORBES, M.D., 14, York-place, Portman-square, W.
1873. WINSLOW, LYTTLETON STEWART FORBES, M.B., D.C.L., LL.D., 33, Devonshire-street, W. c.
1876. WOAKES, EDWARD, M.D., 78, Harley-street, W.
1900. WOOD, GUY M., M.B., 6, Woburn-square, W.C.
1886. WOOD, T. OUTTERSON, M.D., 40, Margaret-street, Cavendish-square, W. c 3.
1873. WOODHOUSE, ROBERT HALL, M.R.C.S., 1, Hanover-square, W.
1891. WOOLLETT, CHARLES JEROME, F.R.C.S., "Ambleside," Streatham, S.W.
1898. WRIGHT, SYDNEY FAULCONER, M.D., St. Peter's Lodge, Eltham-road, Lee, S.E.
1884. WYMAN, WILLIAM SANDERSON, M.D., Red Brae, Putney-hill, S.W. c 2.

1891. YARR, MICHAEL THOMAS, Major, R.A.M.C.
1884. YEO, I. BURNEY, M.D., 44, Hertford-street, Mayfair, W.
1897. YOUNG, WILLIAMS H. FROME, M.R.C.S., Malcolm Corner, Worple-road, Wimbledon.
1884. YOUNGER, EDWARD GEORGE, M.D., 19, Mecklenburgh-square, W.C. c 3.

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NON-SUBSCRIBING FELLOWS.

1868. Bateman, Sir Frederic, M.D., J.P., Upper-street, Giles-street, Norwich.
1872. Bell, John Hougham, M.D., Ventnor, Isle of Wight.
1868. Buckle, Fleetwood, M.D., Staff Surgeon, R.N., Merton Lodge, Southsea.
1870. Clouston, Thomas Smith, M.D., Royal Asylum, Morningside, Edinburgh. FM 1870.
1868. Folker, William Henry, F.R.C.S., Hanley, Staffordshire.
1869. Foster, Sir Walter B., M.D., M.P., 14, Temple-row, Birmingham.
1868. Fox, Charles Henry, M.D., 35, Heriot-row, Edinburgh.
1868. Gaine, Charles, 30, Gay-street, Bath.
1871. Glynn, Thomas Robinson, M.D., 62, Rodney-street, Liverpool.
1868. Knaggs, Samuel, 2, Bradley-lane, Huddersfield.
1869. Lees, Charles Alexander, M.D., Dep. Inspector-General, R.N.
1869. Mathews, Robert, Bickley, Kent.
1871. Maurice, Oliver Calley, M.D., J.P., 75, London-street, Reading.
1868. McIntyre, John, M.D., LL.D., Odiham, Hants.
1868. Nevins, John Birkbeck, M.D., 32, Princes-avenue, Liverpool.
1871. Ogle, William, M.D., The Elms, Derby.
1869. Philipson, Sir George Hare, D.C.L., M.D., J.P., 7, Eldon-square, Newcastle-on-Tyne.
1869. Price, William Preston, M.D., 1, Ethelbert-crescent, Margate.
1869. Prior, Charles Edward, M.D., 4, Goldington-road, Bedford.
1869. Roberts, Bransby, M.D., Ash Grove, Eastbourne.
1869. Stear, Henry, Saffron Walden, Essex.
1869. Taylor, Charles Bell, M.D., 9, Park-row, Nottingham.
1869. Walker, John Swift, M.D., Hanley, Staffs.

*** As it is very desirable that the foregoing Lists should be kept as accurately as possible, Fellows are requested to send notice of any corrections that may be necessary to the Secretaries or to the Registrar.

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GENERAL MEETING.

May 13th, 1901.

JOHN H. MORGAN, F.R.C.S., *President*, in the Chair.

Report of the Council for the Session 1900–1901.

THE Council begs to submit its Report upon the work of the Society during the Session 1900–1901.

The total number of Fellows is now 713, being 16 less than last year, and 34 less than in 1899. The details for the past three years are given in the following table :—

	1898–1899.			1899–1900.			1900–1901.		
	Ord.	Hon., &c.	Total.	Ord.	Hon., &c.	Total.	Ord.	Hon., &c.	Total.
At beginning of Session	659	87	746	662	85	747	650	79	729
Elected in Session ...	32	6	38	21	1	22	15	1	16
	691	93	784	683	86	769	665	80	745
Less—									
Deaths	7	8	15	10	7	17	14	7	21
Resignations	12	—	12	14	—	14	10	—	10
Struck off	10	—	10	9	—	9	—	—	—
Made Hon. Fellow ...	—	—	—	—	—	—	1	—	1
Total Decrease ...	29	8	37	33	7	40	25	7	32
Total at end of Session ...	662	85	747	650	79	729	640	73	713
Nett Increase or Decrease	+3	−2	+1	−12	−6	−18	−10	−6	−16

Sir William MacCormac, Bart., K.C.B., K.C.V.O., a past President of the Society, was elected an Honorary Fellow.

The Council regrets to have to report the deaths of the following Fellows :— Honorary — Professors Crudeli, Da Costa, Ollier, Potain, and Pachoutin ; other Fellows — Dr. J. Althaus, Mr. W. Anderson, Dr. G. Bird, Dr. John Cockle (President, 1879), Mr. Symons Eccles, Dr. D. C. Embleton, Mr. J. E. R. Grant, Dr. W. Gristock, Dr. C Huddart, Dr. A. Jamison, Dr. A. H. Jones, Mr. T. Moore, Dr. Leslie Ogilvie, Dr. W. R. Rogers, and Mr. J. Wiblin.

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The Annual Oration, delivered by Dr. J. Kingston Fowler, on "Medicine and Science in the Eighteenth Century," was well attended and much appreciated.

The Lettsomian Lectures, by Dr. J. Mitchell Bruce, on "Diseases and Disorders of the Heart and Arteries in Middle and Advanced Life," were unique in their practical value, and an important addition to this branch of Medicine.

The Anniversary Dinner was very well attended and proved a great success.

The Council regrets to have again to call attention to the decrease in the total number of Fellows, no doubt, in a great measure, due to the large number of special and suburban Medical Societies. The Council would be glad if Fellows of the Society would use their best endeavours to induce their friends, especially the younger members of the profession, to join. If this suggestion were adopted the meetings would be better attended and the papers more fully discussed than they are at present.

Report of the House and Finance Committee for the Session 1900–1901.

The Committee report that the financial position of the Society continues satisfactory, and that the receipts from permanent tenants are about the same as last year, but that the occasional lettings have slightly fallen off.

The last three debenture bonds of the original 1885 issue have been paid off during the current financial year, making a total redemption of £1,100 during the last five years, and leaving the sum of £2,500 (the second issue of debentures) still outstanding.

The Committee regret to report that the Council of the Metropolitan Borough of St. Marylebone have raised the assessment of the Society's premises from £334 to £417, which, at the current rating, results in a permanent annual extra charge of £36.

The exterior of the Society's premises and the rooms occupied by the Registrar were painted last autumn, and the whole of the buildings are now in a good state of repair.

(Signed) D. H. Goodsall,
Chairman.

Honorary Librarian's Report, Session 1900–1901.

I have the honour to report that the condition of the Library for the year ending April 30th, 1901, has been satisfactory. The number of volumes borrowed from the Library has been 228, an increase on that of last year. From Lewis's Library, 65 volumes have been borrowed, and the arrangement with the latter continues to be of great service to the Fellows.

The additions to the Library during the year, exclusive of periodicals and exchanges, were: purchased, 38 (26 second-hand); presented by authors and publishers, 24; second-hand volumes presented, 23; making

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a total of 85 volumes. The principal donors were Dr. J. Althaus (executors), Dr. W. H. Allchin, Mr. W. H. Bennett, Surgeon-Major W. G. Black, Mr. McAdam Eccles, Mr. D. H. Goodsall, Dr. A. Haig, Dr. F. de Havilland Hall, Mr. Reginald Harrison, Dr. G. Herschell, Mr. C. B. Keetley, Mr. R. Lake, Mr. C. B. Lockwood, Dr. H. Macnaughton-Jones, Dr. R. Maguire, and Mr. R. D. Pedley.

No further rebinding of the earlier works has been carried out during the year, but a number of these will be put in hand during the recess—a vote for this purpose having been made by the Council.

Dr. Nias kindly undertook to inspect the Greek MSS. in the possession of the Society, of which there are about 14 bound volumes. The cataloguing of these is very defective. About six volumes have been inspected and Dr. Nias is still engaged in the work.

Appended is a list of the principal new works acquired :—

Allchin (W. H.). 'Manual of Medicine.' Vol. ii.
Bennett (W. H.). 'Massage in Recent Fractures.'
——— 'Simple Fractures.'
Eccles (W. McAdam). 'Hernia.'
Cheyne (W.) and Burghard (F.). 'Surgical Treatment.' Vols. iii and iv.
Fox (R. Hingston). 'William Hunter.'
Goodsall (D. H.) and Miles (W. E.). 'Diseases of the Anus and Rectum.' Part i.
Green (T. H.) and Murray (H. M.). 'Pathology and Morbid Anatomy.' 9th edition.
Haig (A.). 'Uric Acid in the Causation of Disease.' 5th edition.
—— 'Diet and Food.' 3rd edition.
Hall (F. de H.) and Tilley (H.). 'Diseases of the Nose and Throat.'
Hare (H. A.). 'Progressive Medicine,' 1900. Vols. i–iv.
Harrison (R.). 'Vasectomy and Urethro-stenosis.'
Hedley (W. S.). 'Therapeutic Electricity.'
Herschell (G.). 'La Constipation Habituelle.'
Jamieson (W. A.). 'Diseases of the Skin.' 4th edition.
Keetley (C. B.). 'Orthopædic Surgery.'
Lake (R.). 'Laryngeal Phthisis.'
Lockwood (C. B.). 'Appendicitis : its Pathology and Surgery.'
Macnaughton-Jones (H.). 'Practical Points in Gynæcology.'
Maguire (R.). 'Prognosis and Treatment in Pulmonary Tuberculosis.'
Pedley (R. D.). 'Hygiene of the Mouth.'
Schaffer (E. A.) 'Physiology.' Vol. ii.
Sheild (A. M.). 'Lectures on Nasal Obstruction.'
Stewart (C.). 'Catalogue of Physiological Series in Mus. R.C.S., Eng.'
Yeo (I. Burney). 'Food in Health and Disease.' New edition.

(Signed) Sidney Martin,
Hon. Librarian.

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MEDICAL SOCIETY

DR. BALANCE SHEET, FROM 1ST OCTOBER,

RECEIPTS.

	£	s.	d.	£	s.	d.
Balance from Last Account						223 14 10
Ordinary—						
Subscriptions				507	3	0
Entrance Fees				12	1	6
Life Composition Fee				12	12	0
Rents { Bolt Court	£85	10	0			
Chandos Street	754	0	6			
Occasional Lettings ..	87	5	6			
				876	16	0
Sale of 'Transactions'				2	5	0
Interest on Deposit Account				2	8	10
						1,413 6 4
Cheques outstanding				44	12	9
Less Cash at Bank, 30th September, 1901 ..				30	19	3
Balance, being excess of Expenditure over Receipts						13 13 6
						£1,650 14 8

FOTHERGILLIAN

	£	s.	d.
Balance from Last Account	72	14	3
Dividend on £916 10*s.* 5*d.*, 2¾ % Consols	25	4	0
	£97	18	3

Examined, compared with vouchers, and found correct.

(Signed) JOHN CAHILL,
GEO. STEELE-PERKINS, } *Auditors.*

4th October, 1901.

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OF LONDON.

1900, TO 30TH SEPTEMBER, 1901. CR.

EXPENDITURE.

	£	s.	d.	£	s.	d.
Ordinary—						
Rent, 11 and 12, Chandos Street	285	0	0			
Rates, Taxes, and Insurance	190	7	5			
Registrar's Salary and Allowances	130	4	6			
Collector's Poundage on Subscriptions	25	7	1			
Reporter's Salary	18	18	0			
Stationery and Printing	15	3	4			
Printing and issuing 'Transactions'	134	14	8			
Library Expenses	24	11	2			
Postage and Stamps	9	16	5			
Coals and Wood	10	19	5			
Gas and Electric Supply	50	1	5			
Repairs	112	2	0			
Interest on Debentures	98	11	10			
Conversazione	45	0	0			
Refreshments at Meetings	13	2	0			
Patients' Expenses, Clinical Meetings	1	17	6			
Lantern and Microscopic Demonstrations ..	4	14	0			
Bankers' Charges, 3*d.*; Travelling, 3*s.*	0	3	3			
Subscription to International Congress on Tuberculosis	2	0	0			
Wages	46	11	6			
Chandlery and Cleaning	14	7	2			
Anniversary Dinner £78 0 0						
Less Fellows' Tickets 60 18 0						
	17	2	0			
				1,250	14	8
Extraordinary—						
Redemption of Three Debentures	300	0	0			
Legal Expenses (on account)	109	0	0			
				400	0	0
				£1,650	14	8

FUND.

	£	s.	d.
Books Purchased for Library..	12	6	11
Balance at Bank, 30th September, 1901	85	11	4
	£97	18	3

(Signed) D. H. GOODSALL,
Treasurer.
3rd October, 1901.

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BOSTON MEDICAL
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LIBRARY

TRANSACTIONS

OF THE

MEDICAL SOCIETY OF LONDON.

128TH SESSION.

October 8th, 1900.

ADDRESS ON THE ROMANCE OF SURGERY.

By the President, JOHN H. MORGAN, M.A. Oxon., F.R.C.S. Eng.

GENTLEMEN,—When it was announced to me that by the kind suffrages of the Fellows of this ancient Society I had been elected to the important and honourable position of your President, it was not without considerable apprehension that I accepted the position which was offered. For it could not but be felt that to follow in the footsteps of so many distinguished men as have occupied this chair would be a task of no small difficulty. I was, however, reassured by a knowledge of the fact that the loyalty of the Fellows of the Medical Society is so thorough and so well proven, that throughout my year of office I could rest secure of the support and assistance of one and all in my efforts to make this Society a focus for earnest work amongst all classes of the profession. I have read with interest and profit the addresses which have been delivered from this chair for the last several years, and so many and so instructive are they that to choose a fresh topic was by no means an easy matter. Following the example of some I might have taken you with me on a holiday excursion. I might have asked you to follow me in journeys over Europe from Lapland to Constantinople, or from Warsaw to Cadiz. Or I might have transported you with me to the barrens of Newfoundland or the woods of Nova Scotia, and although I could not have interested you with a disquisition on the flora that we found together, I might have treated you to some observations on the fauna of those wild

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countries, particularly those which lend themselves to pursuit with the rod, the rifle, or the gun, and have told you many things which are not to be found in works on medicine or surgery as means of diagnosing the age of a hoof-mark or the direction of your camp. Indeed, it has often occurred to me that there are the materials for a most instructive lecture on the cultivation of the powers of observation which is entailed by many forms of sport and the powers of inductive reasoning thereby engendered. We have only to read Baden Powell's hints on scouting to see how many things we neglect to observe in our daily life, whilst their application has been delightfully pointed out by a member of our own profession in the varied experiences of Sherlock Holmes.

But we have returned from our holidays, refreshed and invigorated, as I hope, and ready to apply ourselves to fresh work and possibly to seek new enterprises in the pursuit of our art; and I will ask you to pardon me while I take a brief survey of the present condition of surgery as contrasted with that of a quarter of a century ago and then look forward in the direction of still further progress and advance. For it is little more than 25 years ago that that great change had been accepted which has altered the whole course of surgical history. Lister had been steadily working to find means to combat those many fell obstacles which obstructed the satisfactory work of the surgeon, and his labours were only just becoming universally recognised and acknowledged. I well remember the first important case in which I endeavoured to apply the principles which Lister was then inculcating in Edinburgh. I was then assistant house-surgeon, and a case of wound of the knee-joint was admitted under the care of Mr. T. P. Pick. The patient was a young man, aged 19 years, and a circular saw had caused a wound 4 inches long, dividing the patella longitudinally and incising the outer condyle of the femur to the depth of half an inch and to the extent of three-quarters of an inch. The wound was well syringed out with carbolic acid lotion, the joint also, the wound was closed with sutures of carbolised catgut, covered with protective, dressed with gauze and carbolic oil, and put up on a MacIntyre's splint. Suppuration ensued to a modified extent, and the patient recovered, after many months, with an ankylosed knee. This occurred in 1873, and was at the time considered a great triumph, since the recognised course of such cases had previously been amputation and probably pyæmia. Our methods of that date seem crude as

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compared with those of the present day, when the principles thus followed have been perfected to the system now universally recognised and pursued as the routine method of treatment in such cases. I quote, by way of contrast, the case of a man who was under my care early in the present year, who had driven a chisel through his knee-joint into the condyle of his femur. He was treated with what we now recognise as ordinary methods, and recovered in a few weeks with complete and perfect movement of his joint.

My hospital duties at that period prevented me from going to study at Edinburgh, but as soon as Lister came to London I was a frequent visitor to his wards. It was my fortune to see the first two cases in which he operated for union of a fractured patella, an operation which has always impressed me as demonstrating more strongly than any other the value of antiseptic methods. As a consequence, out of the last 21 cases of fractured patella that have been admitted to my wards, 19 have been successively operated on without a single drawback; the remaining two were not suitable for operation on account of other defects. This alone gives a fair contrast between the surgery of to-day and that of 30 years ago, but the contrast is still more strongly marked when we reflect that there is now no single organ or part of the body which the surgeon is afraid to touch. The brain and spinal cord are freely dealt with for the removal of tumours or other sources of interference with their functions. The lungs are opened for the removal of tumours and for the evacuation of pus that lies in their centre, and even the pericardium is tapped and drained and the heart itself is sutured.

In the abdomen there is no single viscus or part which is free from the attacks of the surgeon; even the liver, which has long been regarded with awe, has been dealt with for the removal of tumours and has been sutured in order to render it less mobile. As to the amount of intestine which can be removed without any obvious detriment, it would appear to be no longer a matter of inches, but even of feet or possibly yards, whilst from a few recently recorded operations it seems possible that the stomach itself can be altogether dispensed with. I shall not, however, detain you with recalling facts with which you are all familiar, the more so since they have been put before us in a most eloquent and comprehensive form by Mr. Pearce Gould in the address which he delivered before the Society in 1895. In that Oration he pointed out the changes that had taken place in operative surgery during the past 30 years and

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the vastly-extended area which had been opened to the surgeon, and he paid a justly-merited tribute to him to whose patient labours this evolution in surgery is mainly due, Joseph Lister, who has made this Society the medium for many of his most important communications, and who only within the past week in the Huxley address, delivered at the school to which I am attached, has shown that age does not wither or time change the depth of his insight into the problems that first occupied his thoughts 30 or 40 years ago, or have dimmed one whit his deep interest in the further development of the art which he has done so much to glorify. How many of us can remember, like our Orator of this year, to have seen maggots in the pus that surrounded a compound fracture? and when we contrast the experience of our student days with our practice in the present, are we not justified in saying that we have witnessed and partaken in the romance of surgery?

But just as romance belongs as much to the past as to the future, so we must not be content to rest upon our oars and fancy that we have reached finality. Indeed, the more one reflects, the more one sees how much there is still left for us to aim at, and it is in the hope that I may indicate some of the paths which we must seek to follow, that I base the remainder of the remarks which I have to address to you. If we come to analyse this recent progress of surgery, I think that it will be acknowledged that the advance has been much more marked in the direction of technique and that the progress of diagnosis has hardly advanced at an equal pace, and that it is in this direction that we must more specially direct our efforts. So great, indeed, is the confidence in the value of operation that it is no infrequent experience to find cases sent to the hospital with the simple indication "for operation" or "for abdominal section." But as in war the prudence and wisdom of a general are as often shown in declining as in seeking an engagement, so the skill of a surgeon is as frequently exhibited by refusing as by consenting to operate. It may be truly said that by the impunity with which we open the abdomen we have learnt much to account for symptoms which were otherwise inexplicable; but just as Hunter regarded an amputation as a confession of failure, so I look forward to the day when exploratory operation will rarely be advised, and when diagnosis will be formed by a careful consideration of symptoms, and reliance placed on that tactile sense which, as Mr. Treves has pointed out, runs risk of being left uncultivated

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by the modern surgeon. It may, nay, it must, occasionally happen that when all points have been carefully considered there is no other course to follow. It lately occurred to me to be asked by my colleague to see with him a woman who gave no sign of any neurotic tendency. She had for a considerable time been under the care of Dr. J. Mitchell Bruce, a warrant that every point which could lead to a diagnosis had been most carefully considered. She was 32 years of age and of fairly healthy appearance. The hair was prematurely grey. She had enjoyed fairly good health till October, 1898, but from that time till the corresponding month in 1899 she was troubled with persistent vomiting, occasional slight hæmatemesis, and tenderness in the epigastrium. She was given every possible treatment—diet, change of air, &c.—but the vomiting persisted and the woman became more and more thin and emaciated. Naturally, the conclusion was forced upon us that some ulceration existed. I opened the abdomen and searched all the organs. The stomach and pylorus, the posterior surface of the stomach, the kidneys, the liver and gall-bladder, and the cæcum all appeared normal and healthy. There were no adhesions anywhere. The wound was closed and except for two slight attacks of vomiting she never had a bad symptom, and she wrote in July last to say that she was working on a farm, had had no more gastric symptoms, and was getting fat. Here without ocular demonstration it was impossible to assert that no lesion existed, but why the symptoms abated must still remain a mystery.

How largely we have profited in the direction of diagnosis by the experience gained from operative measures cannot be better illustrated than by the case of the gall-bladder. Courvoisier has laid it down that, when the gall-bladder is distended and there is coincident jaundice, gall-stones are not the cause but more probably cancer of the pancreas, growths in the common bile-duct, or external compression of that duct. The gall-bladder does not become distended, though it may possibly just be felt, or stones in it may be perceived when a calculus is blocking the common duct and giving rise to jaundice, because the previous presence of calculi leads to thickening of the peritoneal covering of the gall-bladder which resists pressure and, therefore, prevents distension; also because the passage of the calculus along the cystic duct excites inflammation in and around the walls of the duct, which is followed by cicatricial changes that resist pressure and prevent distension. On the other hand, a single

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calculus impacted in the neck of the gall-bladder or in the cystic duct may be followed by great distension, due to secretion from the lining membrane, but, under these circumstances, jaundice is absent. Exploratory operations in the subjects of cancer hasten the end and bring reproach upon surgery. If the gall-bladder be incised hæmorrhage may occur, and a continuous oozing may follow, and operations for the relief of distension of the gall-bladder by continuous drainage in cases of cancer of the head of the pancreas with jaundice are not advisable. These conclusions have been arrived at through the extensive operative experience of Mr. Mayo Robson. Dr. Osler, again, points out the importance of recurrent rigors in cases where no suppurative foci exist. Thus the practical experience of the surgeon and the careful consideration of facts by the physician combine to formulate a series of data by which the phenomena of disease may be recognised and by which the necessity for exploratory operations is gradually diminishing.

The call for early recognition is nowhere more urgent than in the case of malignant tumours of whatever nature or in whatever tissue, a fact which is forcibly pointed out in the most recent edition of Mr. Butlin's interesting work on the 'Surgery of Malignant Disease.' Are we right in trusting to the knife as our only means of eradicating this fell scourge? May it not be hoped that in some way electricity may destroy the elements of tumour growth or that some form of anti-toxin may be found which will counteract the parasite that gives rise to the tumour?

Looking to other fields of surgery we may note that tumours, both innocent and malignant, have been removed from the liver, and Dr. Keen, of Philadelphia, gives a table of 76 cases in which operation has been performed, whilst the interesting lectures of Mr. Mayo Robson record the vast field of successful surgery which has been afforded by the gall-bladder and its ducts. As to the methods and appliances which have been adopted for removing portions of intestine, they can be counted by the hundred, and it is in itself a study for the surgeon to keep abreast with them and to estimate their respective values. So, too, it is with all the other parts of the abdomen that increased experience induces novel methods, many of them improvements and advances on what had gone before. The operative surgery of the stomach presents in a remarkable way the great progress which has been made in this direction. In 1880 Mikulicz first sutured the stomach

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for a perforation. In July, 1900, Dr. Finney, of Baltimore, collected 268 cases, amongst which were 139 recoveries and 129 deaths (a mortality of 48 per cent.). Subphrenic abscess occurred in 20 per cent., and the cause of death in the majority was sepsis. But the point of importance in this particular direction is the difference of mortality depending upon the period at which operation was performed. This has been strikingly demonstrated by Mr. L. A. Bidwell in a paper published in the 'American Journal of the Medical Sciences,' in which he shows that the earlier the operation in cases of perforation the greater the chances of success; whilst Tinker, of Baltimore, estimates the recoveries in cases submitted to early operation at 83·78 per cent. Mr. Mayo Robson collected 188 cases of gastric ulcer, treated surgically, of which 157 recovered and 31 died, thus giving a mortality of 16·4 per cent., and also pleads in favour of more early surgical treatment in cases of an intractable character. Indeed, the stomach would appear to have been of recent years the most prolific area for surgery. Not only are wonderful operations performed but marvellous names are invented. Gastrectasia or dilatation of the stomach is treated by gastroplication or gastro-enterostomy. Gastroptosis or moving downwards of the stomach, as evidenced by a change in position of the lesser curvature, has been dealt with by Mr. Treves, who in the case of a young woman, aged 22 years, found the omentum adherent to a mass of tuberculous glands in the mesentery, preventing him from raising the stomach. He removed the glands and then could restore the stomach and liver, both of which were markedly displaced, and secured the liver with three stout silk ligatures. An American writer on this subject concludes in these words:—"To resume the facts brought out by these operations for gastroptosis, it is evident that improvement is not difficult to bring about, whether one secures the liver only, sutures the stomach itself or the mesocolon to the abdominal wall, or shortens the gastro-hepatic omentum, or finally removes a segment of the abdominal wall. The condition is usually a complex one, and probably a simple gastrorrhaphy will not be sufficient, but should be assisted by right nephrorrhaphy or hepatorrhaphy." What would our ancestors have said to this? But then, the Americans are a go-ahead people.

The surgery of the brain has advanced greatly since Horsley, in 1886, published his directions for operating, and Ferrier and

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Hughlings Jackson showed how to locate pressure. By this means abscess, whether following otitis media or due to other causes, can be successfully located and satisfactorily drained; indeed, this is an almost daily performance, and Mr. Ballance regards a small opening in the cranium as responsible for some of the failures. As to brain tumours Mr. Butlin in his recent edition says:—"It is interesting to observe that surgeons of large experience in brain-surgery of all kinds—for example, von Bergmann—appear to grow less hopeful of the future of the surgery of tumours of the brain"; but Mr. Ballance writes to me that one great success seems to justify perseverance. Tuberculous brain tumour is, in his opinion, a contra-indication to operation, "but encapsuled brain tumours give the best results and they seem most frequent beneath the tentorium. The infiltration varieties cannot be wholly removed, but the operation relieves headache, vomiting, and blindness from optic neuritis." The successes of spinal surgery are more numerous. Caries and tumour here seem to offer a fair return to the surgeon for his operative efforts.

In another direction I think that we may look for a further development of the procedure which has been carried out with such success by Mr. Ballance in the treatment of chronic purulent otorrhœa by the epithelial grafting of the raw bone cavity. I see no reason why a similar procedure should not be followed in cases of extensive necrosis of other bones, or even in some cases of joint disease, as supplementary to the ordinary operation of erasion. In the case of another intractable defect which has hitherto baffled all efforts of surgeons to deal satisfactorily with it some such treatment might be carried out, and for the remedy of ectopia vesicæ the suggestion has recently been made to transplant a portion of the bladder of a sheep to the lower lateral abdominal fasciæ of the patient. After a period of seven or eight days, as proved by experiments on animals, the union of the two tissues is sufficiently strong to allow a plastic operation whereby a skin flap, with the bladder attached, may be swung over upon the extruded bladder and the edges of the attached piece of bladder sutured to the defective parts.

The experience of modern warfare renders it probable that bullets may require to be removed from the substance or even the cavity of the heart. The occasions may be rare, but they must none the less be met by prompt and adequate measures. Not that the surgery of the heart is a new subject, for so long ago as 1648

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Rivolan suggested trephining the sternum in cases of pericardial effusion, and a summary of 80 cases of paracentesis for serous and purulent effusion has been published by Dr. Samuel West, and Jamain collected 121 cases of wound of the heart in which there were 16 recoveries. Stabbing wounds are less dangerous than bullet or cutting wounds. John Bell is said by Foy, of Dublin, to have been the first to remove a foreign body from the pericardium and to cleanse and to drain it. In 1898 Podrey did a pericardotomy for a bullet wound of the heart, the pericardium was evacuated, washed out with boric acid lotion, and a fibrino-purulent deposit was stripped from the heart. A wound 1 centimetre long was found in the right ventricle. A needle was introduced to feel for the ball and passed right through the heart, which was palpated and the ball felt for but not found. The wound of the heart was not sutured. The patient recovered, and several cases are on record in which wounds have been successfully sutured, one notably by Pagenstecher of a wound of the left ventricle 3½ centimetres long which was treated by four sutures and the patient recovered.

The best means of treatment of chronic enlargement of the prostate, whether by suprapubic, perineal, or urethral prostatectomy, or by orchidectomy, or by vasotomy, or vasectomy, is a subject that I should much like to hear discussed at this Society.

The further development and application of the X rays to surgery and medicine is a study which I should like to see appropriated by members of the profession. I believe that it is still in its infancy and that there is a great future before it. But in order that we may obtain the full advantages of its resources, it appears to me that the study must be pursued by men having a thorough medical training and must not be allowed by them to fall into the hands of mechanicians lest its progress as a scientific aid to diagnosis be checked. I heartily commend it as a new form of specialty to those who have time and opportunity to pursue this entrancing study.

It will be objected that no man can be expected to have the whole gamut of surgery in his mind, or rather at his fingers' ends, and that thus the tendency to specialism, which is daily becoming more and more marked, must continue to increase till—like the ancient Egyptians, as Sir William MacCormac reminds us—there are as many branches of medicine as there are organs of the human body. Whether this is to be brought about, as Mr. Butlin has suggested in his Cavendish Lecture, by a community of workers, "a direct and

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organised scheme for research and the application of pathology to our art," or by the patient labour of individuals, remains a question for the future.

If there ever was a subject on which surgeons once deluded themselves into the happy fancy that they had reached a climax of success it was the treatment of simple fractures. But the spell is broken, the veil of self-satisfaction is lifted, and we are told that our lines are false, our measurements are incorrect, and that our methods tend only to incorrect axes and, consequently, to the starting of joint lesions and the confirmation of defects, for which our treatment is alone responsible. Such allegations are somewhat startling, and one wonders if the bones of Hamilton, of Pott, and of Astley Cooper lie quiet in their graves, or if their ghosts are wandering uneasily in Cavendish Square. But in face of this accusation it behoves us to look into the matter and to consider how far and in what cases should the fragments of a fractured bone be brought into apposition by wire and screws; and whether the disturbance of the tissues which is involved in their application may not often cause more harm than if the fracture were treated by more ancient methods?

In the foregoing remarks I hope that I shall be pardoned for confining myself to that branch of work to which my past years have been devoted. But I am well aware that, although not so strikingly evident, the advance of medicine has been steady and constant. It is in the nature of things that disease once asserted may be beyond reach of cure. But the art of the physician in the prevention of disease, in its early detection, and in guiding it to a successful issue has progressed with strides almost equal to those of which the surgeon so justly boasts, and the two branches of our art are every day more closely united by the fact that the physician by his early diagnosis appreciates the moment when he may seek the assistance of a surgical ally, and the two are brought together in the combat against many ills which neither alone might have sufficiently appreciated, and in their union is a strength which every year makes more victorious. May this combination grow ever stronger and may their united efforts ever tend to ease the sufferer and to relieve the afflicted! For such is the end and object of our art.

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October 22nd, 1900.

SOME REMARKABLE CASES OF SARCOMA.

By A. MARMADUKE SHEILD, M.B., B.C. Camb., F.R.C.S. Eng.

FOR many years surgeons have dwelt upon the sources of error and doubt which attend the diagnosis of sarcoma. The following case of suppuration, in connection with this malady, illustrates very forcibly the almost insuperable difficulties that may occur even when elaborate pains and care are taken, and all modern methods of investigation employed.

In March, 1899, I saw, with Dr. James Andrews, of Hampstead, a gentleman, aged about 40, who had lived hard but never suffered from syphilis. A dubious tumour of large size had gradually developed towards the lower part of the left thigh. This formation had been noticed for about six months, beginning as a "thickening" about the lower third of the shaft of the femur. No cause was assigned. There was an obscure history of a crush from a fall off a horse that "rolled" on his knee four years before. Iodides were given in full doses, and strapping with mercurial ointment was employed without avail. Shortly before I was called in an exploratory incision had been made by a surgeon into the outer aspect of the swelling; no cavity was found, and nothing but blood escaped. The diagnosis of sarcoma was naturally arrived at. When I saw the patient late at night, in company with several medical men, he was somewhat relieved, from the very significant circumstance that pus had escaped from the wound. Previously for several days he had been ill and delirious, with considerable fever. I found a well-developed man, ill and feverish with a dry tongue and all the signs of septic infection. The lower third of the left thigh was occupied by a large, somewhat fusiform, tumour the size of a big pumpkin, which had the aspect of a soft sarcoma. But the skin over it was red, it was hot to the touch, and, moreover, felt elastic and fluctuated in all directions with great distinctness. I at once mentioned my doubts as to whether the case was one of inflamed sarcoma or abscess, and advised that another exploratory incision should be made, and that if the case turned out to be sarcoma, amputation should not be performed in the

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present inflamed and septic state of the thigh. This was agreed upon and carried out on the following morning. Dr. Parry-Jones, of Derby, gave an anæsthetic, and Dr. Le Fanu and Dr. James Andrews were present and assisted. The previous incision was enlarged and deepened, and my finger at once entered a large cavity. On withdrawing the finger a gush of pus took place. The amount was not measured, but it filled a considerable-sized bowl. I made a counter opening on the inner side just above the knee, and evacuated more pus. The shaft of the femur was bare of muscles for some 4 or 5 inches, but not denuded of periosteum. The patella and capsule of the knee could be felt, the abscess being evidently quite extra-articular, but beneath the quadriceps tendon. The movements of the knee were free. The walls of the large cavity were thick and definite, but no trace of growth could be felt. Large tubes were inserted, and the cavity well flushed out. I suspected that this great abscess depended upon necrosis of the femur, and the obscure history of an injury some four years before lent some colour to this supposition. I was unable to find necrosis, however, though I made a careful search towards the back of the lower end of the femur, where dead bone is so generally found. I, however, dismissed the diagnosis of sarcoma, and expressed the opinion that the case was one of deeply seated abscess round the femur, and that the cause was obscure. I believed the case would do well. How erroneous this opinion proved subsequent events will show. A few days after the operation there was a return of fever and pain. This was due to some slight retention of discharge, and soon passed away. The tubes were washed out daily, and gradually shortened by Dr. Parry-Jones, of Derby, who paid great attention to the case, and gave me much aid concerning it. The discharge always remained scanty, and the wounds were nearly closed about the middle of April. All this time the fever never quite disappeared, but the temperature varied in an irregular manner, the patient put on some flesh, and looked better than when I had opened his abscess. Indeed, his case had behaved quite consistently with the progress of a suppurative affection. About the middle of April Dr. Jones suspected that the case was not so simple, as a distinct mass again began to form, the swelling assuming much of its old aspect, and the discharge being very scanty. A portion of tissue from one of the sinuses was examined, and the microscopical report, as is

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occasionally the case, was favourable, but sadly misleading. It stated definitely that there was vascular granulation tissue, but no evidence of malignant disease. Dr. Jones informed me that he also introduced his finger into one of the sinuses, and felt the remarkable masses I shall presently refer to.

About this time I wrote and suggested that the discharge should be examined for actinomycoses, but this had already been done. The patient came to town early in May and I examined him. The swelling was as large as ever. The wounds had practically healed. Very distinct fluctuation could be obtained on either side, and the temperature was raised at night. I expressed the opinion that the previous drainage had been insufficient, and thought the whole cavity should be laid open along the outer side, cutting through the vastus externus muscle. I expected to find much inflammatory material and a sequestrum. Before undertaking so extensive an operation, I desired another opinion, and Mr. Treves saw the patient with Dr. Andrews and myself early in May. He was at once struck with the resemblance of the case to one of actinomycosis, and suggested that the discharge should be again carefully examined for the Ray fungus. He supported the free opening and curettage with patient and prolonged flushing, and subsequent gauze tamponade.

I operated two days after, Dr. James Andrews and Dr. Collingwood Andrews kindly assisting. I incised through the former external opening, but to my great surprise and disappointment nothing but blood and glairy fluid escaped. On introducing the finger into the former abscess cavity, nothing was felt but curious masses of growth, in great number, rounded in contour, evidently pedunculated and attached to the walls of the cavity. Some of these were quite polypoid, and without much trouble I enucleated one with the finger and brought it out of the wound. It was the size of a large tomato, firm and flesh-like, and, on section, succulent, and slightly roseate in hue. The feeling of the rounded pedunculated masses to the finger was extremely peculiar, and unlike anything I had ever previously experienced. The diagnosis of some serious form of new growth was then only too clear, and I abandoned the contemplated operation of free opening. My colleague, Dr. Rolleston, examined the tumour and found that the appearances of a mixed form of sarcoma of malignant aspect were very definite.

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The femur was quite free. The growth was obviously a huge cystic sarcoma in the soft parts of the thigh, and the explanation of the case clear. Septic infection had occurred from the primary incision, and the large cavity had practically been converted into an abscess. The evacuation of so abundant a quantity of pus was exceedingly misleading, and explained a diagnostic error which, under the circumstances, was perhaps almost unavoidable, and, I believe, would have been made by any surgeon.

Amputation at or near the hip was now the sole resource. I did not urge it, as the case in all respects was very unfavourable, and the fear of leaving infected flaps could not be laid aside. All further treatment was refused. The growth rapidly extended, and the patient died of exhaustion in July, 1899. An early amputation prior to any septic action in the thigh, might perhaps have saved him for a time. I have thought it right to publish this case, because it carries with it much useful instruction. I believe that any surgeon who had seen it would have fallen into error and pronounced the malady undoubtedly inflammatory. I think it one of the most striking I have ever experienced, and one which illustrates the extremes of caution with which we should deal with such curiosities of surgery, in a prognostic and diagnostic point of view.

The second case is again very remarkable; ulceration of a toe, followed by melanosis of glands in the groin. Through the kindness of Dr. Martin, of Hammersmith, I saw in January, 1899, a gentleman, aged 49. For about 12 months the fourth toe on the right foot had given him pain. He attributed his trouble to the fact that a corn formed underneath the toe, and that he rubbed this with his boot. Anyhow an obstinate ulcer formed on the plantar surface of the toe, and refused to heal. On examination an oval ulcer with irregular margins was seen to occupy the under surface of the toe; it was deep, and nearly exposed the tendon. The base was covered with pale granulations, and the edges were "heaped up," white and callous, exactly like the tissue of a "corn," which, indeed, I opined it to be. The toe was amputated, the wound healed in a few days, and the patient left my care much relieved in walking. In April he came and showed me an enlarged gland about the size of a filbert in Scarpa's triangle. This had been noticed accidentally. The swelling was movable and elastic, and at one spot the sensation of fluid was evident. I believed the swelling to be a suppurating gland, still the possibility of a new growth entered my mind, and

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I urged upon the patient the importance of having the lump at once explored by an incision. Unfortunately, this advice was declined. Other opinions were taken, and the patient, largely swayed by the advice of irresponsible relations, allowed his case to take care of itself. I saw him from time to time, and fluctuation was so evident in the increasing swelling that the diagnosis of a chronic abscess seemed more and more certain. The thought of entering an exploring syringe was not absent, but I feared to do this to a possible soft growth unless I had permission to at once proceed to operation. In May the swelling had increased to the size of half a small orange, and had commenced to cause grievous pains down the course of the crural nerves. I now felt there was ground for serious alarm, and spoke very strongly to the patient regarding his grave condition. He entered "the pay wards" of Guy's Hospital, and was operated upon by Mr. L. A. Dunn, who kindly informed me that the swelling in the groin was a soft melanotic growth. This result much astonished me, for I had looked at the toe very critically, and I feel sure, having seen several of these most deceptive cases, that any blue or black discoloration would have at once arrested my attention. I presumed that the extensive ulceration about the melanotic nodule in the toe had obliterated the usual local characters of the disease.

I need hardly say that this case ran the usual unfavourable course of melanosis, and the patient ultimately died of extension of the malady.

The third instance I bring before you is one of sarcoma of the tibia simulating an abscess. A married woman, aged 41, had obscure severe pains in the right leg for about three months. The site of greatest severity was near the right knee on the inner side. She was a healthy-looking woman, all the bodily functions were well performed, and there was no evidence of syphilis. There was a diffused and hard swelling on the inner side of the tibia just below the knee. This was a little red, hot, and exquisitely tender. Indeed, the symptoms were those of a localised periostitis of a somewhat acute nature. The patient was admitted into St. George's Hospital on July 29th, 1899, and placed on large doses of iodides. The pains were not relieved, and by the middle of August there was a fluctuating swelling the size of a pigeon's egg over the tibia. Indeed, the diagnosis of abscess probably associated with necrosis seemed very certain.

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On August 19th the swelling was opened by the house surgeon under the supposition that it was an abscess. I may relate exactly what occurred, as it more forcibly illustrates the extremely interesting lesson this case teaches. Being present, I remarked: "Do not lay that open at once, but make a puncture into it to be sure of your diagnosis. Some of these swellings turn out to be soft sarcomata, and if you lay these freely open you will land yourself in disaster. I do not think this is anything of the kind, but still make the puncture." This was accordingly done with a fine knife, and instantly a jet of blood shot up to the height of several inches, slightly rising and falling with an ill-marked pulsation. The picture was one which no one who saw it could ever forget. I closed the puncture by a deep suture, put on pressure, and prepared the patient the next day for a possible amputation should this be needful.

On August 24th Esmarch's apparatus was applied, and I turned up a quadrilateral flap over the site of mischief; a soft, brain-like, sarcomatous growth, the size of a small orange, was disclosed, and it came through the compact tissue of the tibia by a curiously-circumscribed hole which looked as though made by a trephine. This was obviously only part of a much more serious condition of the interior of the bone, and I therefore amputated in the lower third of the thigh, the patient making a good recovery. Dr. Lazarus Barlow kindly examined the specimen and reported that the growth was sarcomatous, of the nature which used to be termed myeloid, and that it had originated in the medullary tissue of the tibia.

A serious mistake was avoided in this case by a precaution which well may have seemed to be superfluous; and the confirmation of the diagnosis here may perhaps serve to re-establish a reputation which, in the minds of my audience, may have been blemished by the relation of my first case.

The last case I am about to mention is one of surpassing interest, especially to my medical *confrères*. In the year 1898 I saw a strong, robust-looking man, aged about 40. For six months he had been ailing with vague pains about the back and the left side, especially complaining of severe shooting pains down the left thigh and over the buttock. He had seen several physicians, as well as practitioners of standing and sagacity. The consensus of opinion had been in favour of rheumatism, and he had gone abroad and taken "waters" without benefit. I have no doubt, at

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this early period of his case, that diagnosis was really quite impossible. On examining him I was struck with some enlarged veins over the left side of the abdominal wall, and on deep palpation a mass, hard, irregular, and fixed, could be felt under the left false ribs, close to the side of the spine. I watched the case for some weeks, though much pressed for an immediate opinion, and noting that there was an irregular but nocturnal rise of temperature, I began to fear that the case was one of spinal disease with deep abscess. One day, however, the patient drew my attention to a swelling of the left testis, which he said he had suffered from since the onset of his symptoms. The testis had, moreover, gradually become larger. On examining the organ it was obviously the site of an enlargement affecting the body rather than the epididymis, and on carefully palpating the cord some masses could plainly be felt towards the inguinal region. Though no history of syphilis could be obtained the patient was placed on full doses of iodide of potassium, but after continuing the treatment for some weeks no improvement took place. The mass in the belly became more evident and could especially be felt posteriorly, whilst the pain was worse. I now gave an opinion that the case was one of retro-peritoneal sarcoma, secondary to a testicular growth. This was afterwards verified by Sir William Broadbent and others.

This case ran the usual progressively fatal course. A remarkable feature in it was the nocturnal elevation of temperature, which averaged 101°, but sometimes rose to 102° or 103° F. Towards the end of life severe attacks of phlebitis and thrombosis occurred in the femoral and iliac veins, giving rise to agonising pain and necessitating the free use of narcotics. No autopsy was allowed, but huge masses of disease, obviously retro-peritoneal and secondary to the growth in the testis, had been evidently pressing the intestines forwards.

These four cases are related as forcibly illustrating the extraordinary problems that the different varieties of malignant disease may present. Opinions on the explanation of fever in sarcomatous growths are very desirable. Mistakes are hardly to be avoided, even with the extremes of caution. And, as errors of judgment are well said to teach us more than successes, I venture to bring the subject before you, because I am aware that similar instances have occurred in the practice of others, and that the subject is one of unsurpassed interest and importance as well as of extreme difficulty.

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Mr. TURNER said he would like to mention a few cases of sarcoma which had been under his own care and were a little peculiar. One was a case which he related some years ago at a meeting of the Clinical Society of London, of sarcoma of the thyroid gland. When he first saw the patient the sarcoma pressed on the trachea, and the condition was so serious that he had to perform tracheotomy. He was compelled to open the trachea in the thorax rather than in the neck, and to pass a No. 12 gum catheter, as it was quite impossible to use a tracheotomy tube. He went for his autumn holiday, expecting to hear on his return that the patient had died. When he came back, however, the whole tumour had disappeared. A portion of the tumour had been examined microscopically and proved to be sarcoma. The patient remained apparently without anything the matter with her neck for six months, after which time the tumour began to recur. At a consultation it was decided that he should endeavour to remove the tumour; and accordingly, assisted by Mr. Dent, he cut down upon it, but they came to the conclusion that its removal was impossible. The wound was stitched up, and, curiously enough, the tumour all but disappeared again. A portion of the growth was again taken away and examined. Finally the woman died, and, at the autopsy, it was found that sarcoma of the thyroid gland was present. At the time of her death, however, the tumour was almost non-existent; there was only a little sarcomatous tissue. Further particulars appeared in the 'Clinical Society's Transactions.' With regard to melanosis, Mr. Sheild had mentioned an interesting case, and he (Mr. Turner) saw another one some years ago. He was asked by Mr. Haward, one autumn, when he was assistant-surgeon at St. George's Hospital, to operate on a case for him and to remove a melanotic sarcoma on the back of the neck. He did so, and found, studded throughout the cellular tissue, masses of melanosis so numerous that the appearance simulated that produced by peppering with small shot. He took it away as far as he could, and when it came to his turn to go for a holiday, Mr. Dent subsequently removed a gland in the neck in which there was undoubted melanotic sarcoma. It came some weeks after his (Mr. Turner's) operation. He was able to keep himself informed of the condition of the patient, who had attended for at least three years as an out-patient, and had remained free from any return of the disease. At the time these cases were under his care he looked up the literature of the subject, and was astonished to see in how many well-authenticated cases sarcoma had disappeared. That was 10 years ago, and he thought that up to that time at least 35 such cases had been recorded. He saw, in the practice of another surgeon, a case of abdominal sarcoma, which, as far as could be made out, disappeared. Recently he had had a very interesting case of retro-peritoneal sarcoma, not secondary to anything, but behind the peritoneum, in the layers of the mesentery. This case he had in conjunction with Dr. Rolleston, and they were about to publish the particulars of it in the 'Lancet.' The distinction between abscesses and sarcomata was a very difficult question. He published a case some years ago in the 'Transactions of the Pathological Society' of alveolar sarcoma, which was in every respect like a lumbar abscess growing from the spine. The patient had all the symptoms of such abscess: tenderness, rigidity of that part of the spine, &c.; but when an exploratory puncture was made the case proved to be one of alveolar sarcoma. These four cases from his own practice showed how peculiarly sarcoma might sometimes behave. Another point of interest was the frequency with which sarcoma was diagnosed when not present. Ever since the idea of acute traumatic

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malignancy had prevailed, he had seen cases from time to time with a suspicion of malignant disease about a fracture, but yet they would all agree that the cases were few in which such suspicion was confirmed. The whole subject of the diagnosis of sarcoma from inflammatory affections was of great interest and well worth discussing.

Surgeon-Major BLACK said he remembered some years ago a case at the operating theatre of the Edinburgh Infirmary, where a tumour of the breast was removed, under the idea that it was sarcoma, a solid growth. But when the surgeon inserted the knife everyone was astonished to find that a large quantity of pus was evacuated. In another case, in London some time ago, a tumour of the breast was removed under similar circumstances, supposing it to be solid, but when incised a large quantity of blood came away. The first turned out to be an encysted abscess, and the other was an encysted hæmatocele.

Dr. ROLLESTON said he thought it was wiser to speak clinically of melanosis rather than of melanotic sarcoma, because many of the growths commonly termed melanotic sarcomata were, in reality, carcinomatous. He wished to draw attention to a point which, though it did not come into Mr. Sheild's paper, had some bearing upon it, namely, the capricious character of melanotic growths. As Mr. Sheild had mentioned, melanotic growths generally had a correspondingly bad prognosis. On the other hand, there were examples of melanotic growths which behaved very capriciously and which, though in reality malignant, were scarcely so clinically. This was especially the case in melanotic growths arising in the skin. He remembered cases in St. George's Hospital during the last 10 years, which he had had the opportunity of examining microscopically, and in which the growth, instead of running a rapid course and quickly killing the patient, had remained almost local, or its rate of progress was exceedingly slow. In some of those cases which he had examined the tumour was carcinomatous, and had spread by the lymphatics.

Dr. CAMPBELL POPE said several years ago he had a case—which Dr. Frederick Roberts saw with him—of a gentleman who was suffering apparently from phthisical symptoms, having great dulness in the back between the shoulders, increasing difficulty in breathing, profuse night sweats, elevation of temperature, and so on. The case was diagnosed as one of phthisis, with an abscess in the glands of the posterior mediastinum. Early one morning he (Dr. Pope) was summoned to the patient, who was bringing up a large amount of matter. That turned out to be not pus, but soft sarcoma. Anything which tended to elucidate the origin of such things was interesting, and for that reason he mentioned the fact that the man was employed in the Records Office, and when that establishment was removed from Chancery Lane he was engaged in moving dusty books and manuscripts for several months, so that he was in a chronic state of dust. As his illness came on soon after that removal, that circumstance might have been connected with its origin.

Mr. WATERHOUSE said he would like to mention a case of sarcoma which had presented some difficulty in diagnosis. It was that of a young barmaid, aged 19, who nine years ago attended his out-patient room at Charing Cross Hospital with the following history:—She had fallen down from an omnibus and broken her right humerus about the middle of the bone. She was taken into the hospital, treated for the fracture, and afterwards attended for some six weeks as an out-patient. When the splints were taken down he was surprised to find no union, though there was a good deal of what he took to be callus. The splints were re-applied

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for another four weeks, but still the callus seemed excessive and there was no union. A consultation was held on the case, and, taking her age and the definite history of injury into consideration, it was thought to be simply a fracture as a result of the fall. He, however, cut down upon the seat of the trouble, when it became plain that the case was one of sarcoma; and amputation at the shoulder joint was accordingly performed. He saw the girl, from time to time, for eight years afterwards, and at the end of that time, having lost flesh considerably, she was admitted into the hospital under Dr. Abercrombie for pleurisy of the opposite side, and tapped. The fluid abstracted was hæmorrhagic, and she died about four or five months later of sarcoma of the left lung. It was the right arm which was amputated. The case was very interesting, owing to the long interval between the primary growth in the arm and the secondary one in the lung.

The PRESIDENT said he hoped it would be a good augury for the present session that they were going to have some more of the extremely honest confessions that they had heard that evening. Nothing could be more interesting or entertaining than the narration of the cases which Mr. Sheild had put before them; and other speakers had shown how varied were the course and development of sarcomata met with in surgical practice. He thought it enforced the saying of Lord Justice Bowen, that "We are none of us infallible, not even the youngest of us." It showed that notwithstanding all the care and trouble that surgeons might bestow, those growths would sometimes defeat them both in diagnosis and treatment. An interesting point in Mr. Sheild's first case was the presence of suppuration, which was very unusual in cases of sarcomata. Still, it was a matter which had to be borne in mind, and he was ready to confess to having made a very considerable error in a case of sarcoma which came to him in the course of this year. The patient was a little boy who had met with an accident which necessitated his lying up for several days with what was said to be a sprained ankle. From that he seemed to get well, and was again on his legs. But shortly afterwards he met with another slight accident and was brought into the hospital, and he (Mr. Morgan) then found that there was redness and swelling about the os calcis. He pointed out to the students that the os calcis was very rarely the seat of malignant disease, but that it was an extremely common site for tubercular disease in boys, such as the one before them, who was certainly a tubercular-looking patient. He regarded it as a case of tuberculosis. He rested the patient for a few days, but there was so much redness of the skin, swelling, and heat, that he thought it was going on to suppuration and that, therefore, the sooner it was opened the better. When, in the operating theatre, he put the knife into the swollen mass, no matter came out at all, but he found a broken-down mass of cancellous tissue, which was only too plainly sarcoma. He was entirely deceived by appearances until he made his incision. He was particularly interested in the story of the second case related by Mr. Sheild, and he remembered one which went through almost identically the same course. It was that of a patient with ulceration about the toe, which seemed to be due to some neurotic disturbance, but later it was thought to be probably a sarcomatous growth, though at the same time there was no sign of melanotic mixture with the growth. He amputated the foot and the patient did well for a time, but only for a short time. Later the glands became swollen and the condition of those glands when opened showed that there were melanotic deposits in the sarcomatous tissue affecting them. One thing, he thought they

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should consider carefully, was, whether they were always right in presuming the case might be one of syphilis and putting a patient with a doubtful tumour on large quantities of iodides. They always did so, but how many of them remembered a case in which it had done good? Cases did occur, but in nothing like a decent proportion. All the cases quoted showed how very far they might be from exact diagnosis of a common malady, and, as he had said, the more cases of a similar nature which had led to erroneous diagnosis that could be related to the Society the more they would profit from the session.

Mr. SHEILD, in reply, said he was obliged for the kind way in which his paper had been received. The cases which had been mentioned only served to amplify the extraordinary nature of sarcomatous disease. He had brought the cases forward rather to illustrate the difficulties in diagnosis than to mention peculiar cases of the disease, of which he had experienced a very large number. He might have made a very elaborate paper if he had narrated all the queer and out-of-the-way cases of sarcoma that he had seen. With regard to the remark of Surgeon-Major Black as to mistakes regarding malignant tumours of the breast, such mistakes were, of course, well known. In the case of deeply-seated tumours of the breast, especially if they were not exposed by incision, the diagnosis would always be uncertain and mistakes frequent. Exploratory incision reduced the chance of error. The remark which had been made about the administration of iodides was very apposite. He thought that, as a rule, iodides should never be given in a way to cause interference with operative measures. Perhaps the practice of giving iodides was more harmful in cases of epitheliomatous ulceration of the tongue than in any other, because a small epithelioma might be treated for months with iodides, and at the end of that time, when its real nature was detected, it might have become inoperable. On the other hand, in cases of dubious deep-seated swellings, although they were often compelled to give iodides for a certain time, the treatment did not often cause their disappearance. A point he would have liked to have heard opinions upon was that of increased temperature in connection with rapidly growing sarcoma. That was the one symptom which was more likely to lead practitioners astray than anything else, especially when the swelling was deeply seated. Though it did not often occur it was a clinical fact, which, so far as he knew, had never been explained. Something must be absorbed in the circulation which acted upon the nervous system, but what it was he did not know. Another important feature in connection with those growths was, as he mentioned in his third case, blocking of the veins. In sarcomatous disease, especially of the internal organs, the femoral vein was apt to get blocked, and the patient thus suffer great pain.

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ARTHRITIS IN ASSOCIATION WITH PERITYPHLITIS.

By F. J. Poynton, M.D., M.R.C.P.

The association of arthritis with perityphlitis, though not a common occurrence, has attracted some attention, because it has seemed likely to throw light upon the ætiology of perityphlitis. Some observers, who have noticed this association, have advanced the suggestion that rheumatic fever is an important cause in the production of perityphlitis and have brought forward evidence in its support. This evidence for convenience I have classified under four headings. Firstly, there is the occurrence of perityphlitis in the subjects of acute rheumatism; secondly, the occurrence of a polyarthritis, resembling that of acute rheumatism, coincident with, or shortly after, an attack of perityphlitis; thirdly, there is the reaction of some cases of perityphlitis to treatment with salicylates; and lastly, there is the structural analogy of the tonsils and appendix vermiformis.

To take the last of these first, Bland-Sutton, Kelynack, Mayo Robson, and others have proved that lymphoid tissue is present in the appendix. Those who support the rheumatic hypothesis, point out that cold is a factor in appendicitis and also in rheumatism. They compare the tonsil and the appendix, and, guided by the undoubted fact that tonsillitis is frequently the earliest symptom of rheumatic fever, conclude that, in some cases, perityphlitis may also be an early symptom of the same disease. This argument is both interesting and ingenious, but doubtless requires further support from clinical and pathological observation.

The occurrence of perityphlitis in the subjects of acute rheumatism has been called attention to by Dr. G. A. Sutherland in a paper published in the 'Edinburgh Hospital Reports' of 1895. Dr. Sutherland published in this paper examples of this association, occurring in children, in whom there was a personal and also a strong family history of rheumatic fever. The attacks of perityphlitis, judging from the reports, were mild, for none of them was an operation required. This from the strictly scientific aspect detracts necessarily from their value, for it is the absolute proof, either by operation or necropsy, that is especially desirable in a question of such a nature as this one.

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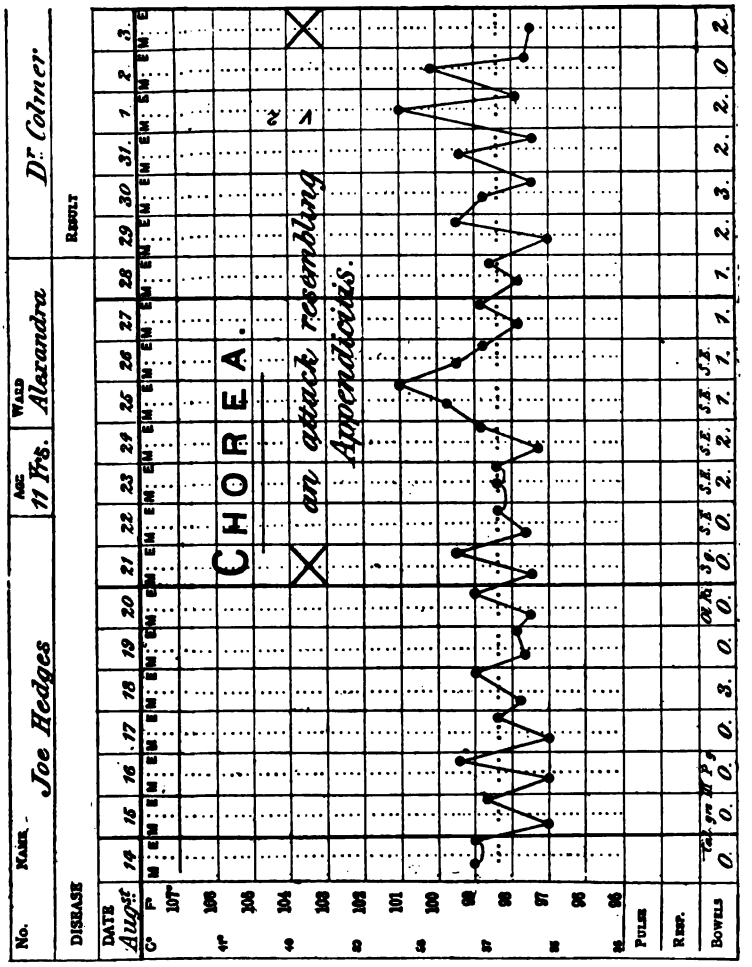
I have quite recently met with a case resembling in some respects those described by Dr. Sutherland, and for leave to use the notes of this case I am indebted to my colleague, Dr. Colman. A boy,



aged 11, under my care at the Hospital for Sick Children, Great Ormond Street, for rheumatic chorea, was admitted in August to the hospital. The chorea was not severe but stubborn; the heart was dilated, and there was a faint systolic murmur. While in the

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hospital the bowels became obstinately constipated, and pain was complained of in the right iliac fossa. The bowels, in spite of treatment, were only thoroughly opened upon one day between August 14th and 22nd. Synchronous with the pain, there was a rise of temperature. The fever was intermittent, lasted for about 14 days, and reached at its maximum 101°. The tenderness over the right iliac fossa continued, a definite mass could be felt, and vomiting occurred upon two occasions. The bowels were kept open by enemata, and gradually the fever and internal symptoms disappeared.

This case is plainly inconclusive, for all the symptoms might have been the results of constipation, and even if there was, as seemed probable, some actual appendicitis, the occurrence of chorea may have been a mere coincidence.

There is, I believe, a general agreement among those who have especially studied rheumatism in childhood, that such children frequently suffer from obscure abdominal pains. Such experience as I have had has given me the impression that these pains are generally paroxysmal, and usually referred above the umbilicus to the epigastric region. They have interested me, because it has seemed difficult to satisfactorily explain them, though it is probable that in some cases the pain is situated in the abdominal muscles.

The occurrence, in association with perityphlitis, of multiple joint affections, having the character of a rheumatic arthritis, has been recorded by several observers, and a very complete case was published by Dr. Burney Yeo in the 'British Medical Journal' for June, 1894. A girl, the subject of an acute attack of rheumatism some months before, had been ill for a fortnight with pains in the elbows and knees and general malaise. She then developed severe abdominal pain, and was admitted upon April 16th to King's College Hospital with a definite and severe attack of perityphlitis. There was temporary improvement, but four days afterwards, with a recrudescence of the perityphlitis, her elbows and wrists swelled and became extremely tender, and an apical systolic murmur present on admission became louder and more definite. The perityphlitis was sufficiently severe to raise the question of pyæmic metastases, but complete recovery followed without operation. The temperature and joint lesions reacted to a marked degree to treatment by salicylates. There was this unusual feature about the case that the temperature was remarkably high and irregular

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for rheumatism, reaching on one occasion 105°, and on another over 104°, but it must be allowed that there was the perityphlitis also to be reckoned with. Other similar cases have been reported by Sir James Grant, Dr. Brazil, and others, all of which recovered, some with marked abatement of the symptoms under the use of salicylates. It is this reaction to salicylates that has been brought forward as another source of evidence. Their value has been commented upon by Dr. Sutherland, Dr. Haig, Dr. Beverley Robinson, and others, but the explanation of the success obtained is not ascribed by all these observers to the same cause. Dr. Haig, looking upon these cases of appendicitis and arthritis as manifestations of gout rather than rheumatism, considers the success of the salicylates as due to increase in the elimination of uric acid. Others look upon their success as evidence of the rheumatic origin of the illness. Finally, Dr. Beverley Robinson, though convinced of their great value in the treatment of perityphlitis after several years of close inquiry, writes as follows:—

"I do not remember personally to have seen an attack of acute articular rheumatism either distinctly precede or follow evident signs of appendicitis, and to be connected with it in such a way that the relation of the two affections was clearly defined."*

The inference, I think, is that in such cases as these, though salicylates may be of value for the relief of symptoms, their success is no proof of the rheumatic character of those symptoms. This is a view maintained by several authoritative writers, and in this paper I am able to bring forward some evidence in its support.

To recapitulate at this point, I think it may be justly said that though there is some evidence in support of the rheumatic origin of perityphlitis, it is hardly as yet sufficient for scientific proof, and the possibility of coincidence in two diseases of common occurrence has always to be taken into account. During the two years that I was medical registrar and pathologist at St. Mary's Hospital, I was enabled to follow up this question, especially upon the clinical side, and investigated 60 cases of perityphlitis, with reference to this question of rheumatism. As my guide I took the manifestations of the rheumatic state as laid down by Dr. Cheadle in the Harveian Lectures for 1888, and the observations were made

* In a recent letter to me Dr. Robinson expressed himself as convinced from clinical observation of the rheumatic origin of some cases of appendicitis.

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upon cases of every grade of severity. In 31 the diagnosis was confirmed by operation, and only undoubted examples were chosen; 40 were first attacks, the remainder were recurrent, and 18 of these patients were subject to repeated relapses, so that all the types of this disease were represented. The ages varied from 6 to 57 years. In none of these cases—and this is in agreement with Dr. Beverley Robinson—could I trace any connection between the attack of perityphlitis and an attack of rheumatism, though in a certain number there was a history, more or less doubtful, of a previous rheumatic attack. Thus, in 11 cases there was a family or personal history, and in five a personal history. In one case there was a definite systolic murmur, but this patient, in addition to perityphlitis and a previous arthritis, had suffered from typhoid and dysentery, and was apparently susceptible to most infections.

There were in the series two cases of multiple arthritis occurring shortly after the onset of perityphlitis.

Two papers, one by Piard upon "Metastatic Suppurations in Connection with Appendicitis," and one by Akerman upon "Experimental Osteo-myelitis," seem to throw light upon these difficult cases.

Dr. Piard, in the Paris 'Archives de Médecine' in 1896, though he made no observations upon arthritis, gave numerous examples of visceral, pleural, and intra-muscular abscesses occurring after appendicitis, and emphasised the important clinical fact that such metastases are especially liable to occur in those cases in which the local evidences of perityphlitis are absent or but slightly marked. Akerman, in the third volume of the 'Archives of Experimental Medicine,' published some interesting results obtained by intravenous inoculations of the bacillus coli into young rabbits. If pure cultures were injected of sufficient strength to allow characteristic lesions to occur, a multiple osteo-myelitis developed, and, with this, changes in the neighbouring joints. Usually the fluid within them was increased and varied in character with the virulence of infection. It was sometimes clear, sometimes turbid, and sometimes purulent. In several instances the bacillus coli was demonstrated in these joints. The condition developed more slowly than in ordinary suppuration.

Again, numerous investigators have demonstrated the importance of the coli bacillus in perityphlitis, and these organisms have been demonstrated in the metastatic visceral abscesses, and by Sevestre

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and Gaston in the joints in a case of polyarthritis complicating the disease.

It is not surprising, I think, in the face of the observations of Piard and Akerman, that cases of polyarthritis in connection with perityphlitis may appear clinically much like rheumatic arthritis. There may be no definite local evidence of the original focus, possibly only a vague history of abdominal pain with vomiting. The swellings of the joints may be multiple, and disappear during life, the fever be lowered and pain relieved by salicylates, yet after death a gangrenous appendix and visceral abscesses may be found, pointing conclusively to the metastatic origin of the joint infection. Not only may there be effusion into the joints, but also into the tendon sheaths in their neighbourhood, and around the epiphyses of the bones. If we can be guided by Akerman's experimental results, the disappearance of the joint effusion during life may be looked upon as an evidence of the slight virulence of the *local* infections. If with this the *general* toxæmia be severe, then there will be death, but disappearance of the joint swellings prior to its occurrence; if the general poisoning be not severe, then there will be recovery, with a condition of multiple arthritis simulating acute rheumatism. In a case of this kind which ended fatally, and in which the appendix was gangrenous, I have seen marked relief from the use of salicylates.

It is probable, therefore, that the arthritis occurring in connection with perityphlitis is usually of the nature of a pyæmic rather than a rheumatic affection, and this becomes the more probable if there is high irregular pyrexia, or if there are rigors. That the condition should be liable to occur when the local indications of perityphlitis are slight, is in part, I suppose, explained as follows: If the attack is very severe, there is perforation, with either speedy death, or recovery after an immediate operation. If the attack is not so severe, but the local signs are definite, then, should unfavourable symptoms arise, a laparotomy is at once performed, and the metastases nipped, as it were, in the bud. If, however, the local signs are practically absent, and the history of the illness indefinite, then these metastases develop while there is doubt as to where the primary focus is to be found, or as to whether such a focus exists at all. It is probable also that in these cases there is an unusually rapid blood infection, rather than any great direct extension of the local suppuration.

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This question of the exact nature of the arthritis is clearly one of practical moment, for if rheumatic, temporising measures might be employed, but if pyæmic, removal of the local focus is imperative. It is of some interest that just as this arthritis may closely resemble that of rheumatism, so may rheumatic arthritis sometimes resemble perityphlitis. Upon three occasions I have seen monarticular rheumatism of the right hip-joint in a child simulate this condition. The thigh is flexed, and the pain radiates over the right iliac fossa. In these days of active surgery the diagnosis is of course important, and usually quite easy. Other joints become affected, or the heart shows evidence of active rheumatism, indeed the knowledge of the possibility of this occurrence is usually sufficient to prevent any error. In conclusion, it appears to me that clinical evidence is, on the whole, against the rheumatic origin of the arthritis associated with perityphlitis. I am anxious to obtain information upon this question from the Fellows of this Society, for I feel that the two diseases in question are of such frequency and gravity as to render an expression of your opinion both of interest and of importance.

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Dr. ROLLESTON said he had listened with very great pleasure to Dr. Poynton's paper. He had expected, after the recent demonstration of the bacterial nature of rheumatic fever by Drs. Poynton and Paine, that some forms or cases of appendicitis could be proved to be rheumatic. The idea had been in the air for a long time; Dr. Cavafy, of St. George's Hospital, a good many years ago had successfully treated cases of

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appendicitis with salicylate of soda. There was a close homology between the tonsil and the appendix. There was a certain amount of prejudice against the view that appendicitis might be rheumatic, based, in all probability, upon the fear that, if a case was regarded as rheumatic appendicitis, proper operative treatment would be neglected when the occasion for it arose. He thought there was some danger in it from that point of view, but its degree had probably been exaggerated. Both in the tonsil and appendix the inflammation in rheumatic subjects might be started by the rheumatic diplococcus, and subsequently become secondarily infected. He had believed for a long time that in many instances the initial stage of appendicitis was purely rheumatic, but in a short time the resistance of the appendix was so diminished that other and virulent micro-organisms got a footing and set up a mixed infection, which might give rise to the most severe forms of appendicitis with gangrene. He thought they were in Dr. Poynton's hands, and that probably that gentleman in a few months' time would be able to show, when a suitable appendix was removed, that it was or was not affected by the diplococcus of rheumatism. His own impression was that the recurrent attacks which characterised catarrhal appendicitis might be due to the diplococcus of rheumatism, that in many cases secondary infection occurred, and that these secondary infections might be just as virulent as one primarily caused by the bacillus coli communis. He had seen cases of appendicitis recover while under the administration of salicylate of soda, though he did not attach great importance to that, because they might have got well without any treatment whatever except rest in bed. He had very seldom seen arthritis associated with appendicitis, and when it had existed it was not a striking feature, but had to be looked for. He did not remember appendicitis occurring during the course of rheumatic fever. On the other hand he had seen cases in which attacks of appendicitis had been followed by the development of endocarditis, but he could not say that this endocarditis was necessarily due to rheumatism, very probably it was not in all the cases.

Mr. Wallis said that similar conditions of arthritis, such as had been mentioned, were found in connection with other conditions than appendicitis, and the paper just read opened up a large subject. This year he had read a paper before the British Medical Association on cases of non-malignant stricture of the rectum, and in pointing out the fact that ulceration was the cause of stricture he had drawn attention to three cases in which, from time to time during the ulceration period, a painful condition of joints had occurred, the joint becoming filled, hot and tender, and the temperature rising as high as 103°. These patients were treated with salicylates to no purpose, and when the ulceration was sufficiently quiet to allow the affected bowel to be excised, which in all three cases was successfully performed, the joint troubles had entirely ceased. This was strong suggestion that the arthritis in these cases was produced by infective micro-organisms which originated from the ulcerated area, and Mr. Wallis thought it more than probable that the cases mentioned in Dr. Poynton's paper of arthritis associated with appendicitis were due to a similar cause, and that rheumatism had little or nothing to do with it.

Dr. Savill said he was inclined to agree with Dr. Rolleston that the subject was a very difficult one, on account of the possibility of the introduction of secondary infection into the appendix. They must on this account rely to a large extent upon clinical data, and therefore he was all the more inclined to mention a case which puzzled him much

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some years ago, and which Dr. Poynton's paper now cleared up. It was that of a man of 30 years of age who was admitted into hospital with very extensive joint lesions. The history was, that he had had gonorrhœa about a year or 18 months before and got well of it. The joint mischief came on two months before admission. The case so closely resembled blenorrhagic arthritis that they were almost forced to that diagnosis in the absence of any other, only there had been no gleet. Salicylates and other remedies did him absolutely no good. He suffered an enormous amount of pain in the joints as well as elsewhere, but unfortunately their attention was never directed to the abdomen. At the autopsy they found there was a considerable amount of mischief around the appendix. He had died suddenly from perforation of the appendix. He thought they were justified in concluding that the appendix was the seat of the primary mischief for a very long time, and that the joint lesions were of the nature of a secondary pyæmic infection; the joints having been previously damaged by gonorrhœa. He thought it would be very difficult to draw any conclusions with regard to the rheumatic origin of either appendicitis or the joint mischief associated with it, but one might conclude that there was a definite pyæmic connection between cases of appendicitis and the arthritic mischief which followed in some cases.

Dr. H. A. Caley said he thought the rarity of arthritis in association with appendicitis, whether during an attack of appendicitis or in the previous history, was a very strong argument against there being an intimate relationship between rheumatism and appendicitis. He recently collected, for another purpose, particulars of 200 consecutive cases of appendicitis, and in that series there were not more than two or three cases having arthritic symptoms. He thought the same might be said of other manifestations of rheumatism besides arthritis. Of course, it might be urged that in some cases there was a special rheumatic affection of the appendix analogous to that of the tonsils, and that the rheumatism might spare other parts, but he did not think there was any adequate evidence to lead to that conclusion; he therefore thought that the contention of Dr. Poynton, that the occurrence was more of the nature of septic infection rather than a rheumatic affection of the joints, had much to support it. There was one consideration, however, which he would like to mention. Occasionally in cases of appendicitis, and particularly where there had been no appendicitis but definite catarrhal colitis, arthritic symptoms subsequently developed. The question was whether in such cases the colitis might not be connected with the rheumatic state. Personally, he thought it was. As an exceptional secondary consequence of catarrhal colitis a catarrhal appendicitis might develop and lead to perityphlitis. In that connection he would like to ask Dr. Poynton whether, in those cases in which he had found an association between arthritic manifestations and appendicitis, he had discovered any evidence of catarrhal colitis. There was some evidence, however, to show that in a small proportion of cases of appendicitis there was a history of the passage of mucus and other symptoms pointing to catarrhal colitis. He thought, then, that under certain circumstances there might be an indirect connection between appendicitis and rheumatic manifestations through the medium of a catarrhal colitis.

Dr. Poynton, in reply, thanked the Fellows of the Society for the kind way in which they had received his paper. He would like to correct any impression that he had brought forward his paper in any dogmatic spirit.

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The facts in regard to the cases which Dr. Sutherland had published were definite; there was no doubt that they were rheumatic children, and that they had something which, apart from operation or necropsy, was appendicitis. That was perfectly clear, and it was to that extent the association seemed to be proved. But he (Dr. Poynton) could not get hold of a case where the appendicitis was sufficiently severe to cause death or lead to an operation, and yet be intimately associated with an attack of rheumatic fever. The President commented on the rarity of arthritis, as did also Dr. Caley, and he thought there could be no doubt that its occurrence was extremely rare, perhaps partly so because of the active surgery which was carried out nowadays in appendicitis. Dr. Rolleston had spoken in favour of a certain number of these cases being rheumatic, and brought forward the point that in a great many cases they might be primarily rheumatic and secondarily infected. Nothing could be more likely, and upon that turned the difficulty of the whole question. He thanked Dr. Rolleston for the friendly way in which he had referred to the diplococcus which Dr. Paine and he had demonstrated recently before the Pathological Society. He was afraid that diplococcus had not been born long enough to enable him to say much about it. If it proved in the end to be the actual cause of rheumatic fever, and if it should be found in cases of appendicitis, then a very definite link in the association would be established. Mr. Wallis alluded to some very interesting cases of ulceration of the lower bowel followed by arthritis. There, he thought, very much the same questions arose as in appendicitis. The interest was to know what kind of micro-organisms got into these joints. He had followed the condition of the joints closely in arthritis complicating appendicitis, but the only case on which he had the opportunity of doing a necropsy was one in which the joint condition subsided a week before death. Dr. Caley had commented upon the occurrence of colitis in association with some cases of perityphlitis, and on the association of arthritis with colitis. He (Dr. Poynton) was not aware that it occurred in any of the cases which he collated from the 'British Medical' and other journals. In the case on which he did the necropsy he feared he did not notice whether there was colitis or not.

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November 26th, 1900.

THE DIAGNOSIS AND TREATMENT OF INTRA-THORACIC ANEURYSM.

By F. DE HAVILLAND HALL, M.D., F.R.C.P.

IN December, 1889, a discussion on the diagnosis and treatment of aneurysm of the aorta was opened by Dr. Douglas Powell, and occupied the Society two evenings. Since that time the subject of aneurysm has received but little attention from the Society. As a peg whereon to hang some remarks, I will read the notes of a case of intra-thoracic aneurysm. The patient consulted many of the leading physicians in London and elsewhere, and very conflicting opinions were expressed as to the nature of his case.

I first saw the patient, a man of 55, in October, 1895, in consultation with Mr. Bond. He complained of a harsh cough, which was of a peculiar clanging character, and accompanied with but little expectoration. The cough had lasted some six or seven weeks.

At this examination I noted that the apex beat was displaced somewhat outwards and downwards. The first sound was not quite clear at the apex. There was no marked accentuation of the aortic second sound. The radial pulses were equal; the pupils were equal; the vocal cords were slightly congested, otherwise normal. The respiratory sounds were normal. The liver was apparently somewhat contracted. Though the character of the cough led me to suspect the presence of an aneurysm, there was no physical sign to support this view.

Five weeks later I again saw the patient with Mr. Bond. The cough had been better, but had returned. The only additional physical sign I noticed was impairment of resonance at the left apex. I did not see the patient again until July, 1896, when I noted that there was some pulsation in the second left interspace, with loss of resonance on percussion. There was some fulness of the veins on the left side of the neck. In the left inter-scapular region the breathing had a marked bronchial character. The vocal cords remained normal except for slight catarrh, and the pupils and pulses were equal. The harsh clanging cough continued. As the

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result of my examination, I came to the conclusion that the patient had an aneurysm. I ascertained that he had had syphilis in early life, had worked hard and drank freely. He was distinctly gouty, and his vessels were atheromatous. He himself dated the commencement of his trouble from August, 1895, when he helped a stout lady to alight from a coach. He felt at the time something give way in the chest. The patient saw Dr. W. M. Ord the next day, who confirmed the physical signs I have described above, except that he did not recognise any unnatural impulse at the base. Dr. Ord saw the patient in bed, I saw him in my consulting room. This will probably account for the difference. The patient was ordered to lead a quiet life, and to take 5 grains of iodide of potassium three times a day.

I saw him again in October. The physical signs were less marked, and his general condition was excellent. He was still taking iodide of potassium.

My next note was in March, 1897. The patient stated that he had had very severe pain after his last visit to me, but this suddenly ceased. During the last three weeks there had been some difficulty in swallowing. In August of this year (1897) I persuaded the patient to undergo a modified Tufnell treatment; for that purpose I sent him to Brighton to be under the care of Mr. Robert Sanderson. This plan of treatment was not as successful as I had anticipated. The patient was excessively neurotic, and as he had always lived a very active life he felt the confinement intensely. Mr. Sanderson wrote to me after the first 10 days of treatment:—"The mental depression has become more distressing than I ever remember to have seen it in this or any other case."

At the end of the first month, however, the patient wrote to me:—"As regards the confinement to bed, I am standing that part of the treatment very well; much better than I expected. Of course I have less pain when lying down than I had when moving about; there is no doubt about that."

The patient continued the treatment for seven weeks, then he began to get extremely restless and fidgety, and on consultation with Sir Richard Douglas Powell, it was agreed that it was unadvisable to persevere with it, and in the middle of October he left for Australia. On the voyage out the patient suffered much from the heat when in the Red Sea, and from the vibration of the screw. He returned to England in May, 1898.

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I next saw the patient in June, 1898, in consultation with Dr. Barlow, but in spite of all the terrible accounts I had received from the patient as to the disastrous effect of the voyage, I did not find that there was much change in the aneurysm.

In October I noted that there was more swelling over the left chest, and that the veins of the neck were more enlarged. I now lost sight of the patient until May, 1899, when I saw him in consultation with Dr. Scarth, his resident physician. I noted that there was less pulsation anteriorly, but more dulness in the left inter-scapular region, and I came to the conclusion that the anterior sac was consolidating, but that there was a more recent sac from the posterior aspect of the thoracic aorta. In September the patient began to complain of increasing dysphagia. The larynx remained unaffected.

In October I saw the patient for the last time. The only noticeable alteration in his condition was an increase in the difficulty of swallowing, and the constant coughing up of a viscid, glairy mucus. In December he sailed for Las Palmas.

Dr. Scarth has supplied me with a copy of the notes he took during the last fortnight of the illness, from which I extract the following particulars:—From February 3rd to 11th the patient complained of increase of pain, which was localised over the spine of the sixth dorsal vertebra. Later on the distribution of the pain altered, and it was most felt under the left scapula, in the left axilla, and round to præcordial region. After this date the pain subsided. On 11th and 12th there were signs of bronchial catarrh in the left lung. On the 13th he had a short attack of dyspnœa, which exactly counterfeited laryngismus stridulus. On the 14th the cough was much worse but had lost its loud tone. On larnygoscopic examination abductor paralysis of the left vocal cord was found. Next day the cough resembled that met with in whooping cough—at midnight he had a severe attack of paroxysmal dyspnœa, face became purple and surface of body livid. Similar attacks occurred until death took place on February 18th. During these attacks morphine, in $\frac{1}{4}$ to $\frac{1}{2}$ grain doses, was administered subcutaneously, with at first great relief. Nitrate of amyl did not relieve the spasms. Towards the end chloroform was constantly administered, but it only relieved the symptoms for a few minutes. Venesection did not relieve the cyanosis.

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A *post-mortem* examination was made by Dr. Melland and Dr. Scarth. I have abstracted the following particulars from their report:—

On removal of the sternum with the costal cartilages attached, a tumour about the size of a fœtal head, measuring 4 inches across and 3½ inches from above downwards, was found lying immediately above the sac of the pericardium, in the mediastinum. The tumour extended from the level of the third or fourth rib upwards to level of the first rib, the larger part of it lying slightly to left side of middle line. Posteriorly it extended to the vertebral bodies from the second to the fourth dorsal, and was adherent to the latter. The whole of the transverse and descending arch of the aorta was apparently included in the aneurysm. The anterior part of the sac was filled with organised white, tough, fibrous clot, in concentric layers, about 1½ inches thick. The posterior part was lined with white, organised fibrin, about 1 inch thick.

The lowest ring of the trachea was completely absorbed in front, and the four next rings above were partially eroded. The left bronchus was contracted to less than its usual size. The right bronchus also appeared smaller. The left lung was collapsed to about two-thirds the size of the right lung. The anterior wall of the œsophagus was found entirely eroded for about an inch, and there was great thinning of the muscular coats on the posterior wall of the œsophagus, directly opposite this point. The heart was seen to be considerably depressed, and its long axis lay transversely across the body, the right auricle and ventricle lying on the diaphragm at the same level as the apex. The heart was of about normal size and there was no marked hypertrophy of the left ventricle. It was not opened.

The liver weighed 2¾ lbs., and showed specific cirrhosis.

The result of the necropsy was to confirm almost entirely the conclusions at which I had arrived during life. In August, 1897, I wrote to Mr. Sanderson:—"The aneurysm apparently involves the transverse arch of the aorta, just as it passes into the descending part." Later on in the case I came to the conclusion that a second aneurysm had developed on the descending aorta; the *post-mortem* examination, however, showed that the signs and symptoms which I deemed indicative of a second aneurysm were really due to a bulging of the aneurysm posteriorly.

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The constant cough with glairy expectoration was clearly due to pressure on the trachea and bronchi. If life had been spared longer, severe hæmoptysis would probably have occurred from communication between the sac of the aneurysm and the trachea. The suffocative attacks, resembling laryngismus stridulus, of the last few days and the paralysis of the left vocal cord were evidently due to pressure on the left vagus. Unfortunately, there is no mention made of the condition of the nerves. The description of the attacks of dyspnœa closely resembles that of Dr. C. J. B. Williams in the case of Earl St. Maur. The dysphagia, which was so distressing a symptom for some months prior to death, is explained by the pressure on the œsophagus. The condition of the heart, and more especially of the left ventricle, in the case under consideration was that usually met with in aneurysm without valvular disease, namely, apparently normal, with no signs of ventricular hypertrophy.

I cannot do better than preface my remarks on diagnosis by reading a paragraph from Dr. Stokes's work on the 'Diseases of the Heart and Aorta':—

"To those whose knowledge of aneurysm is derived from written descriptions rather than bedside experience, it may appear strange that a disease of such importance should ever exist without being accompanied by signs, which, if not sufficient to determine the nature of the affection, would, at all events, indicate some important organic disease. Yet cases do certainly occur in which, at some period at least, the disease may elude the most careful investigation, and proof is not wanting of the continuance of this latency, even after a copious hæmorrhage has taken place from the sac itself."

The subjective side of the question is also curious, viz., the little discomfort some aneurysms seem to cause the individual. I have seen quite a number of patients in whom the cause of their seeking medical advice has been hoarseness, due to paralysis of the left vocal cord, without any symptoms referable to the chest. In other cases the aneurysm has been discovered when the individual has presented himself for assurance, or when he was being overhauled for some trifling malady. Therefore, both from the point of view of physical signs and symptoms, the diagnosis of an intra-thoracic aneurysm is at times almost impossible.

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The case I have brought before your notice to-night is an example of the difficulties which sometimes attend the diagnosis of aneurysm. When I first saw the patient the only symptom suggestive of aneurysm to be noted was the harsh, brassy cough, with little or no expectoration, with which he was tormented. This at once attracted my attention to the possibility of aneurysm, and I carefully directed my physical examination to exclude it. At this time the evidence was almost entirely negative—no inequality of pulse or pupil, no laryngeal paralysis, and no alteration in the pulmonary condition. There was no marked accentuation of the aortic second sound, but the heart's apex was displaced somewhat outwards and downwards. Too much value should not be attached to any one symptom, in the absence of other corroborative symptoms and signs, but I do think that a harsh, brassy cough occurring in a man over 50 with rather rigid vessels, with a history of gouty symptoms, of syphilis, and of hard work, should certainly lead to a careful consideration of the possibility of an aneurysm being the cause. Pressure upon the trachea, bronchus, vagus, or recurrent nerve by any kind of tumour may give rise to a similar cough, but I think that it is of more common occurrence in cases of aneurysm than in the case of other intra-thoracic tumours. At the second consultation the impaired resonance at the left apex pointed to the presence of a new growth in, or some consolidation of, the lung, but gave no further aid to the diagnosis. When I saw the patient again seven months later the signs of intra-thoracic pressure were indubitable, and the recognition of some pulsations in the second left interspace clinched the diagnosis in favour of the tumour being an aneurysm.

As Sir William Broadbent has pointed out, an aneurysm of the first part of the arch of the aorta may be called the aneurysm of physical signs, whereas an aneurysm affecting the remaining portion of the arch may be called the aneurysm of symptoms.

In the case under consideration, as was proved at the necropsy, the transverse and descending arch of the aorta was affected, the symptoms were consequently more pronounced than the signs at first. One curious feature in the case, and one which tended to render the diagnosis more difficult, was the absence of paralysis of the left vocal cord until within four days of death. Had this been present earlier the diagnosis would certainly have been much facilitated. How the left recurrent nerve escaped pressure it is difficult to understand. I have been struck by the constancy of this sign

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in cases of aneurysm of the transverse and descending arch of the aorta. Of 41 cases of aneurysm seen in the Clinic at Pest, hoarseness was observed in 22, and paralysis of the recurrent in 19, usually on the left side.

Paralysis of the left vocal cord should therefore always excite suspicion of an aneurysm, and, as Sir Felix Semon has pointed out, we should not wait for hoarseness to examine the larynx, because the first effect of pressure on the recurrent nerve is to cause paralysis of the abductor of the cord, and in this event the voice is practically unaltered; the paralysis can therefore be detected only by a laryngoscopic examination. The dyspnœa, which is frequently present in cases of aortic aneurysm, is often of a paroxysmal nature. In fact, nearly all the symptoms of aneurysm exhibit a paroxysmal tendency. This feature of the disease is of service in differentiating it from other intra-thoracic growths. In the patient under discussion dyspnœa was not a marked feature, and it only became paroxysmal at the end.

It is very curious how often one finds an absence of cardiac symptoms in cases of aneurysm, *i.e.*, there may be an absence of dyspnœa, palpitation, syncope, and cardiac pain. In other cases, however, I have observed attacks closely resembling angina pectoris.

In aneurysm of the first part of the arch a pulsation may be recognised at a very early period of the disease; indeed, the patient himself may be the first to direct attention to this condition. When the aneurysm springs from the transverse or descending arch, pulsation is a late sign, or may be altogether wanting. At times a pulsation, not otherwise recognisable, may be detected by grasping the chest anteriorly and posteriorly, and exercising a certain amount of pressure. A thrill is not common in aneurysm, and is not of diagnostic importance. The recognition of a dull area, where normally there should be resonance, is in itself of little value, but, taken in conjunction with other signs, it will materially assist the diagnosis. Very little stress can be laid upon the presence of a murmur. A single or a double murmur may be heard over the base of the heart, but very frequently no murmur is audible. A systolic murmur may be due to pressure, or other causes, but a diastolic murmur indicates arterial disease, and is therefore of greater diagnostic value. By far the most reliable auscultatory sign is the accentuation of the aortic second sound,

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sometimes amounting to a distinct thud or shock. This, when present, affords very strong evidence in favour of an aneurysm. In the 1889 discussion Dr. Douglas Powell stated that: "It is certainly not well heard; some deny it is heard at all except in aneurysms of the first or second portion of the arch." He also insisted upon the greater reliability of a rigid over a flexible stethoscope in detecting the signs of aneurysm. Tracheal tugging, when present, is an additional piece of evidence in favour of an aneurysm, but I cannot recall a case in which it has been of diagnostic value, *i.e.*, in which it has been noticed when other signs and symptoms would have been insufficient for the diagnosis.

The condition of the heart itself is too variable to be of any service in the diagnosis of an aortic aneurysm. If the aortic valve be incompetent, as is occasionally the case when the aneurysm is seated in the first part of the arch of the aorta, there will be the sign of hypertrophy and dilatation of the left ventricle. In the case I have brought before you to-night, though there was displacement outward and downward of the apex beat, "the heart was little or no greater than normal, and no marked hypertrophy of the left ventricle" existed.

The combination of loud tracheal breathing and dysphagia, pointing to pressure both on the trachea and œsophagus, is very suggestive of aneurysm.

The most recently introduced aid to the diagnosis of aneurysm, viz., the Röntgen rays, promises to be of the greatest possible assistance. Thanks to the kindness of Dr. Hugh Walsham, I have the opportunity of showing you a skiagram he took of the patient whose case I have just narrated (Fig. 1), and for the sake of comparison, I show you the skiagram of a normal thorax (Fig. 2). The contrast is most striking. Dr. Hugh Walsham has made this branch of diagnosis peculiarly his own, and as he is here to speak for himself, I will leave him to point out the value of this method, and the fallacies which may underlie it. On one of his suggestions I would lay emphasis, and that is the importance of examining a case of suspected aneurysm with the screen, because it is only in this way that the actual pulsation of an aneurysmal sac can be detected, should the aneurysm be deeply seated in the thorax.

As the time at my disposal is necessarily limited, I have confined my remarks on diagnosis as far as possible to the symptoms and signs met with in the patient whose case is the basis of my

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communication; I have therefore omitted many and important symptoms, such as hæmorrhage, &c.

The treatment of aortic aneurysm must ever be a subject of great interest to the profession. The fact that aneurysm occurs for the most part in men in the prime of life, and its usual long duration after it has been recognised, constitute a prolonged tragedy, and those who have watched such a case as I have described must be anxious to do all in their power to ameliorate the symptoms, if unable to cure the disease.

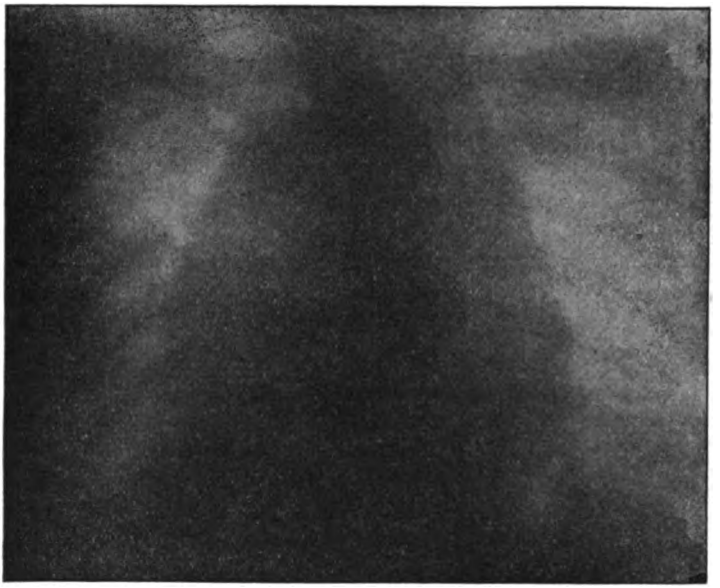

FIG. 1.—SKIAGRAM OF ANEURYSM.

When I am called in to see a case of intra-thoracic aneurysm—I think it best to confine my remarks to this form of aneurysm—I at once consider whether the case in question is likely to derive benefit from the plan of treatment associated with the name of Mr. Tufnell, of Dublin. The first cases I saw treated in this manner were under the care of my old teacher, Dr. Andrew, at St. Bartholomew's Hospital, and, occurring at an impressionable period of my medical career, they have remained imprinted on my memory, and have influenced me much in my treatment of similar cases. It will

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be unnecessary for me to do more than mention Dr. Andrew's cases, as they have been the subject of an excellent paper by Dr. Vincent Harris.* I will only draw attention to a note appended to the paper by Dr. Andrew:—"Fully admitting with him (Dr. Harris) that Tufnell's treatment of internal aneurysms leaves much to be desired, still a method which is successful in three cases out of 13, or in even 23 per cent., and which is attended by little or no danger to the patient, is at least not inferior to any other in present use." These remarks still hold good, and a case like that recorded by Mr. Paulin

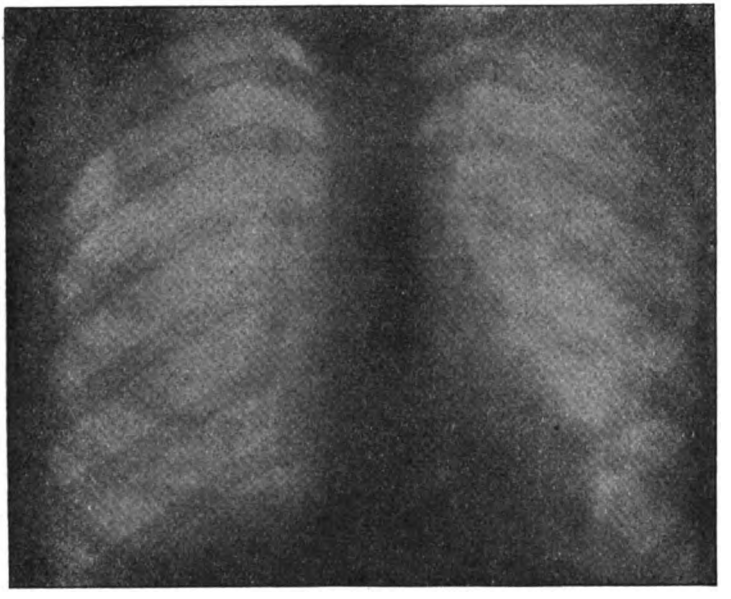

FIG. 2.—SKIAGRAM OF NORMAL CHEST.

Martin† will serve as an encouragement to persevere in this method of treatment, provided the case be a suitable one. Mr. Paulin Martin has kindly sent me the after-history of his patient. He lived an active life, in fact, too active, and died 12 years after treatment from suffocation, probably due to direct pressure on the trachea. No *post-mortem* examination was made. Selection I regard as most important, and in choosing a patient I would lay stress on

* 'St. Bartholomew's Hospital Reports,' vol. xvii.
† *Ibid.*, vol. xxiii.

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his being unemotional, and of a quiet contented disposition. Given these conditions, you may urge your patient to submit to the tedium and monotony, to say nothing of the hunger and thirst, involved in the carrying out of Tufnell's treatment. Now the patient whose case I have brought before you to-night unfortunately presented none of these favourable conditions. He was extremely restless and intolerant of pain and discomfort. He was gifted with a lively imagination and was very emotional, so that the treatment was almost foredoomed to failure. But in spite of all these drawbacks I believe that if the patient had persevered with the treatment his life would have been prolonged.

The social position of the patient requires to be borne in mind. After the treatment has been carried out, only very gradual return to anything like an active life is possible; therefore in the labouring classes it may almost be doubted whether the life of a valetudinarian may not be bought too dearly. Tufnell's plan of treatment is only suitable for sacculated aneurysms; it is contra-indicated in fusiform aneurysms, and, as Dr. Kingston Fowler has pointed out, it should not be attempted if aortic regurgitation be present.

The best results are obtained in the case of aneurysms occurring in the first part of the arch of the aorta. Two reasons may be assigned for this. In the first place they are usually recognised at an early period of their history, and secondly, as they do not involve such important structures as are pressed upon by aneurysms of the second and third parts of the arch, patients are not subjected to the disturbing influences which may happen in the latter case. Moreover, the duration of life is longer in the first class of case than in the second. These remarks are in accordance with the results obtained in the 13 cases recorded by Dr. Harris. Of these cases, three were cured, and in all three the aneurysm affected the ascending arch of the aorta. This was also the position in Mr. Paulin Martin's case.

If Tufnell's plan of treatment be agreed upon the amount of nourishment to be allowed the patient requires careful consideration. This must vary somewhat with the idiosyncrasy of the individual; some patients will stand a diet which would greatly distress others. The difficulty is always on the side of the fluids; patients will submit quietly enough to a reduction in the amount of solids to 10 ounces, but to be limited to 8 ounces of fluid, as suggested by Tufnell, is a very severe trial to most people. Dr. Andrew would

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not listen to complaints of thirst so long as the pulse and temperature continued normal, or nearly so, and all the solid food was taken. I have found that 10 to 12 ounces of solids and 12 to 16 ounces of fluid can be endured by most patients, and these are the minima I advise. The solids may be increased to 18 ounces, but it is unadvisable to give more than 16 ounces of fluid. Alcohol, if possible, should be avoided. Tea with a slice of lemon will be found a refreshing drink, and a few grapes will sometimes give relief. The enforcement of absolute rest is perhaps even more important than the regulation of the diet, but this is very difficult to obtain in neurotic patients; you cannot keep them quiet, even though you confine them to bed. The patient whose case I have narrated was constantly moving either his arms or his legs. By absolute rest is meant that the patient should not leave the bed for the calls of nature, or for any other purpose. It is well not to have too wide a bedstead—3 feet is quite sufficient—the nurse can attend to the patient best in such a bed. It should be on rubber wheels, if possible, so as to allow of movement without jar. A moderately hard mattress on a chain spring will generally be found to answer better than any other kind of bed. Some medical men recommend a water bed. The room should have a southern aspect.

It is very important to secure a cheerful and intelligent nurse, as much of the success of the treatment depends on the strict attention to the details, which conduce to the patient's comfort.

If smoking soothes the patient's nervous system it may be permitted. Unfortunately it seems sometimes to increase thirst.

The next point to be considered is the question of medicinal treatment. I am inclined to believe that Dr. Andrew was wise in insisting that treatment by drugs should not be attempted at the same time as the Tufnell treatment. It has of late years been customary to give iodide of potassium in full doses, *i.e.*, up to 30 grains three times a day, in the hope of lessening the frequency of the pulse. In several cases I have noticed that the iodide, by causing dyspepsia, has, on the contrary, increased the frequency of the pulse. Moreover, the iodide certainly promotes thirst, and this is already one of the great difficulties we have to contend with. Sir William Broadbent, who believes in iodide of potassium in the treatment of aneurysm, gives as his explanation of its action that it virtually effects the same thing as the Tufnell treatment, namely,

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by running off the fluid by the kidneys, and so inspissating the blood.

The greatest argument I know in favour of iodide of potassium in the treatment of aneurysm is the effect it has on the pain, which is so characteristic a symptom of this disease. Sir William Gairdner writes, it "exercises the most striking and sometimes the most immediate relief as regards the pain."

Tincture of aconite in 2 to 4 minim doses is useful for the relief of palpitation or disturbed action of the heart. Digitalis is a drug which, from its physiological action, seems contra-indicated, and I never order it in cases of aneurysm.

In the discussion in 1889 Dr. Ord spoke warmly of the action of large doses of ergot in giving the patient great relief. I have had no personal experience in the use of this drug.

If the pulse be of high tension, an occasional dose of calomel or grey powder will be found useful.

For the constipation which is frequently met with in these cases, some simple aperient, such as compound liquorice powder, or sulphur lozenges, or a simple or glycerine enema, will usually suffice.

If sleeplessness be a troublesome symptom, it may be necessary to give an occasional dose of trional, sulphonal, chloralamide, or one of the other hypnotics, but recourse should be had to this class of drugs as little as possible. If pain be very great, opium or morphine subcutaneously may be necessary.

If the urine become scanty and the patient have gouty or rheumatic symptoms it may be advisable to increase the quantity of fluid temporarily, and give salicylate of sodium or an alkali.

As regards local treatment I have seen relief from the application of an ice-bag or Leiter's tubes over the aneurysm. A belladonna plaster is sometimes useful in diminishing the sense of pulsation in the tumour.

It has been stated * that by placing a patient on his back in bed and keeping him from moving, there is more pressure on the œsophagus, and that very often the aneurysm ultimately bursts into the œsophagus. Is there any exact evidence on this point, or is it merely an impression derived from the experience of one or two cases in which this result has occurred?

The treatment necessarily entails loss of weight; about 20 per cent. would probably be the average loss.

* Dr. Robert Maguire, 'Med. Soc. Proc.,' vol. xxiii, p. 318.

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The difficulty of estimating the amount of consolidation is shown by the after history of a case I exhibited at the discussion which followed the reading of Dr. Douglas Powell's paper in 1889. The patient had been under the care of Dr. Sturges at the Westminster Hospital, and, after having been kept long at rest on tolerably low diet and iodide of potassium, improved so much that he was able to get up and do light work, and it was naturally thought that some clotting had taken place in the sac. The patient died quite suddenly a few months after he was shown, from rupture into the pericardium. The aneurysm was about the size of a cocoa-nut, and the walls were everywhere very thin. Within the aneurysm was only a small quantity of quite recent clot; there was no laminated fibrin.

I have only had the opportunity of trying Lancereaux's method of the subcutaneous injection of gelatine in one patient. This was not a favourable case for the trial of a novel method of treatment, as the aneurysm was rapidly advancing, and there was aortic valvular disease. The injections seemed to have had no effect for good in this case, but, apart from the temporary discomfort of the puncture, no harm resulted. The patient died from engorgement of the lungs. I notice that Dr. Osler has commenced the gelatine treatment in a series of cases admitted to the Johns Hopkins Hospital.

One of the most difficult points to settle in the treatment of aortic aneurysm is whether tracheotomy is to be advised for the relief of the paroxysms of dyspnœa, which are occasionally very severe. The case of the Earl St. Maur, so graphically described by the late Dr. C. J. B. Williams, is a typical illustration of the responsibility which such a case entails. I have been called in at the last moment in two similar cases, and in both I decided that tracheotomy would not give relief. Both these patients died the day after I saw them, and at the necropsy the dyspnœa was found to be due to direct pressure on the trachea.

Dr. C. J. B. Williams collected 34 cases of aneurysm of the arch of the aorta, attended with fits of difficult breathing, all verified by a *post-mortem* examination. Tracheotomy was performed in six cases; in two it gave no relief, having in one case been refused by the patient till too late; another lived two days after the operation, a third lived 12 days, and a fourth 16 days. From what I have seen myself, and from what I have gathered from

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the literature of the subject, I am of opinion that it is but rarely that tracheotomy is likely to be of service in aortic aneurysm. The chief obstruction to the breathing is due to direct pressure on the trachea, even in those cases in which there is spasm of the adductors or paralysis of the abductors of the cords.

In order to limit the area of discussion, I have refrained from mentioning the methods of endeavouring to promote coagulation in the sac by surgical procedures such as the introduction of wire or by electrolysis.

I would suggest the following points for discussion :—

1. The diagnostic value of the diastolic thud in aneurysm of the aorta.
2. Is tracheal tugging ever a sign of great importance ?
3. The range of the Röntgen rays in the diagnosis of aneurysm.
4. If the Tufnell plan of treatment be adopted, how long should it last ? Should it be continuous or intermittent ?
5. What amount of solids and fluids has been found to answer best ?
6. Is it desirable to give iodide of potassium during the course of Tufnell's treatment ?
7. Is there any evidence as to the utility of chloride of calcium in the treatment of aneurysm ?
8. Is Lancereaux's method of treatment by the subcutaneous injection of gelatine a safe and reliable plan ?
9. For what conditions should tracheotomy be advised in cases of aneurysm of the arch of the aorta ?

The PRESIDENT said they had heard a most careful and accurate account of a very interesting and important case. They had had laid before them not only the course and treatment of the case, but in his last few remarks Dr. de Havilland Hall had laid down nine points for discussion. He would ask Sir William Broadbent to kindly open the discussion, as his name had been more than once mentioned in the paper.

Sir WILLIAM BROADBENT said he rose in obedience to the President's request. He thought he had said, on various occasions, all he could on the subject of aneurysm. He happened to have seen the case referred to by Dr. Hall—indeed, he did not know whom the patient had not seen—and some of his consultations appeared to coincide very closely with those on which the patient saw Dr. Hall, although he never heard Dr. Hall's name mentioned in connection with the case. On one occasion he found himself faced by four physicians, of none of whom had he been told beforehand. One of his earliest notes of the case was on July 18th, 1896,

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and Dr. Hall saw him about the same time. But he had seen him previously, and had then come to the conclusion that there was an aneurysm of the third part of the arch, although at that time there was no distinct pulsation. The principal point on which he then relied was a slight extension of dulness to the left of the manubrium, and reinforcement of the aortic second sound at that point. The notes on July 18th, 1896, were :—"Brassy cough, cracked voice, unequal pulse, extension of dulness to the left of the upper sternum." He had also noted a very marked tracheal tug, which was one of the signs he never failed to look for. The left jugulars were full, and did not empty on deep inspiration. There was imperfect entry of air into the apex of the left lung. He ordered iodide of potassium then, but he did not know whether he took it or not. Apparently, however, he was already taking it on Dr. Hall's instructions. He saw the patient again on October 2nd, when all the features were still present, but less marked ; and his judgment was that consolidation had already begun to take place, at any rate in the anterior part of the aneurysm. Still, the second rib of the left side was distinctly lifted. When one pressed the hand firmly, as Dr. Hall insisted was an important point in diagnosis, *i.e.*, pressed it firmly over the suspected area, it could be seen to be lifted. There was also that dulness which he had remarked upon, of the posterior part of the left lung. He saw the patient off and on from that time, and during the later visits it was quite clear to his mind that extension backwards of the aneurysm was taking place. He might remark in passing that he would place no reliance upon mere symptoms as an indication of consolidation. If consolidation were taking place in an aneurysm which was accessible to physical examination, the main points which, in his opinion, indicated the consolidation were the dimiuution in the diastolic shock, and modification of that ringing second sound which was so constantly present. As Dr. Hall had pointed out, murmurs were of no significance whatever in aneurysm. The only occasion on which a murmur might help in diagnosis was when there was no murmur over the aortic orifice, and when in the course of the aorta a systolic murmur became developed. There must be, then, either some roughness in the arterial walls or some aneurysmal dilatation. He happened to be looking up his notes, and found a very parallel case which he saw in January, 1896, in which the physical signs were almost identical with those which had been described, except that the pulsation was more diffuse ; but there was entire absence of paralysis of vocal cord, with fulness of the veins of the neck on the left side. In that case the impaired entry of air extended to the entire left lung. Pulses and pupils were equal. In July, 1896, there was a difference in the two pulses quite sufficient to enter into the diagnosis. In that case the left carotid was smaller than the right. He saw that patient in the present month, and ascertained that he had had a very good summer, and was taking drives and gentle walks ; but there was still a visible heave in the left upper chest, which was distinctly prominent. There was no sharp pulsation, no diastolic shock, and there was an interval of resonance between the dulness appertaining to the aneurysm and the cardiac dulness, and the aortic second sound was not remarkably ringing.

With regard to the points laid down by Dr. Hall, he thought it well to have something definite for discussion. The first was the diagnostic value of the diastolic thud, or, as he preferred to call it, the diastolic shock. When that diastolic shock was present he regarded it as absolutely diagnostic, if well marked. But its absence, and more especially in aneurysm of the second and third part of the arch, must not be allowed

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to interfere with a diagnosis based on other physical signs because it might entirely disappear when consolidation had taken place to any considerable extent.

The next question was, Is tracheal tugging ever a sign of great importance? It was, anyhow, a sign of very great interest, and it was present in the case under discussion at his first examination. He would not look upon it as diagnostic in any special sense, and he had seen it where the aneurysm had been fusiform and not sacculated.

With regard to the range of Röntgen rays in the diagnosis of aneurysm, he thought it an extremely important matter. He had not yet seen a case in which it either made a diagnosis which had not already been made, or in which it contradicted a diagnosis. But it was extremely interesting to see the pulsation of an aortic aneurysm on the screen. He thought it quite possible that in cases of aneurysm of the descending part of the arch, and perhaps in the descending thoracic aorta, Röntgen rays might render very great service, for there were cases which were absolutely inaccessible to physical diagnosis, and in which there was nothing but the symptoms to depend upon, *i.e.*, the pain due to erosion of vertebræ, pressure on nerves, perhaps interference with entry of air to the left bronchus. He did not believe Röntgen rays would be of any considerable aid in the diagnosis of aneurysms of the first part of the arch.

With regard to the Tufnell plan of treatment, as he had found iodide of potassium answer every purpose which could be served in the treatment of aneurysm, he had never attempted that extreme restriction of fluid. The Tufnell idea was only an old idea carried to an extreme, and called by Tufnell's name. Restriction of fluids and limitation of diet, with the forbidding of stimulants, had always entered into the treatment of aneurysm, as far as his recollection went. When iodide of potassium had been given, it had always been impossible to carry restriction of fluid very far. As Dr. Hall had said, he thought they arrived at the same result by two different methods: the promotion of coagulation in the sac was due, he thought, simply to the inspissation of the blood. There was nothing in iodide, nor particularly in potassium, to attain coagulation; in fact one knew that the neutral salts of potash were rather solvents of fibrine than agents tending to promote its formation. He might repeat a remark which he made on a former occasion, and which certainly had been long impressed on his mind, that the opportunity for successful treatment of aneurysm came not in the early stages, when the mouth of the sac was almost as large as the sac itself, but when the sac had enlarged and the mouth was relatively narrow. He had seen the most persevering treatment in the early part of an aneurysm of the first part of the arch—accessible, therefore, by means of physical signs—carried out for a long period of time without making any impression on the aneurysm. When the aneurysm had attained to a considerable size, then consolidation occurred, and it had lasted under observation for nine or ten years, or even more. After what he had said, he had not to reply to the question as to what amount of solids and fluids had been found to answer best. They should be limited according to the individual. Their object should be to minimise the fluids, and particularly to see that the food was in the form of concentrated nourishment. He found it impossible to lay down any kind of rule for such patients. He had given iodide of potassium, and, from his experience and what he had seen, he would say it was not only undesirable but impossible to go on with both at the same time. The experience of others might contradict his, but he had found that

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extreme limitation of fluids and the giving of iodide of potassium could not be carried out at the same time.

He had no experience of the employment of chloride of calcium, nor of the injection of gelatine.

The next question was, For what conditions should tracheotomy be advised? He had very rarely seen a case in which there was the slightest promise of good results from tracheotomy. When, as was mostly the case, the dyspnœa was due to direct pressure on the trachea, then, of course, it was evident that tracheotomy could make no difference. On the other hand, he had many times seen the greatest possible relief follow free bleeding, the dyspnœa and the pain both being ameliorated. He had seen tracheotomy done, but without influence on the symptoms. The cases quoted by Dr. Hall, as living from four to 16 days after tracheotomy, showed that the procedure had no influence in prolonging life, and he would doubt if it had any influence in diminishing suffering.

He had confined his remarks to the points which Dr. Hall had judiciously laid down, and, though there were many other points connected with aneurysm which were open to discussion, he thought he had said enough.

Dr. HUGH WALSHAM exhibited a skiagram showing the sac of the aneurysm referred to by Dr. Hall. The heart, as had been pointed out, was lying almost transversely across the chest. In the Victoria Park Hospital there was a woman presenting the same condition. He could not but think that the Röntgen rays would be of immense use in the diagnosis of aneurysm of the transverse and descending arch. A case was sent him by a colleague not long ago, that had been under the treatment of four different physicians in London. The diagnosis was exceedingly doubtful, but examination by the screen showed at once that the patient had a large aneurysm, probably of the descending arch. In 1897 he admitted to the Victoria Park Hospital a woman with, as far as he could tell, physical signs of aortic regurgitation only. She remained in hospital six to eight weeks, and the physician in charge of her came to the same conclusion, namely, that it was aortic regurgitation only. She came back to the out-patient room three weeks ago, and reported that she had been in very much the same condition, except that the pain between the shoulders had latterly become much worse. As they had the Röntgen ray apparatus in the hospital he examined her with the screen, and found she had a large aneurysm of the descending portion of the arch. He looked up the old notes, and found that then there was no tracheal tugging or paralysis of the vocal cord. Apparently it was thought there might be possibly something more than aortic regurgitation, but no actual conclusion was come to. He had no doubt that the patient had the aneurysm when first admitted to the hospital.

Dr. ROBERT MAGUIRE said there were certain points in regard to the diagnosis of aneurysm which he would have liked to have spoken on. He, however, thought that they would be dealt with by others, and therefore he would speak of treatment only, especially as Dr. Hall had rather challenged him for an explanation. Dr. Hall had not quite correctly quoted his remarks on a previous occasion. He (Dr. Maguire) had, at two meetings of the Society, asked whether anyone in the room had known of a case of aneurysm actually cured by Tufnell's treatment, in the sense that a working man, having been laid on his back for

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12 months, perhaps in hospital, could go about and resume his hard work afterwards. No one on those two occasions had said they knew of such a case, and he himself did not know of one. He asked the same question at the Harveian Society. One gentleman said he knew a hunting man who was able to go about afterwards and resume his hunting; but he submitted that was not hard work. It was desirable to draw a distinction between the man who had to work manually for his living and he who could take matters easily. The latter might have Tufnell's treatment, and possibly be benefited by it. But was it worth while to recommend a working man to leave his wife and family outside the hospital working for their own living without his help, and to lie on his back for 12 months suffering from hunger and thirst, so that at the end of that period he might go out well to do merely quiet work? He did not think so.

Another point to be discussed was that concerning pressure upon the œsophagus. When he had treated cases in this way he had himself prescribed that they should lie upon their backs, but he thought—and that was a point challenged by Dr. Hall; he only thought, but had no actual proof of it—there was therein a liability to increase the pressure on the œsophagus and trachea, and increase the liability to bursting of the aneurysm into one or other of those tubes.

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Without further discussing matters connected with Tufnell's treatment, he would come at once to the injection of gelatine, which procedure he had practised on four cases, all somewhat recently. He exhibited an apparatus, a modification of Lancereaux's (and, he thought, an improvement), for the purpose. He had to use the method in one case because of the importunity of the friends. He had to do it as well as he could, for at that time he had not the apparatus he now showed. The effect as regards the aneurysm was very good. The next case was one in Brompton Hospital; the third was at St. Mary's; and the fourth, like the first, was a private patient. The last patient he saw a couple of hours before that meeting, and the patient said: "If you were to tell me I am not better, I would not believe you." There was no question that the man was better. He thought he should now say what happened to the other patients. He had used 100 cc. (about 3 ounces) of gelatine, which must be heated and most perfectly sterilised. It was a solution of 2 per cent. of white gelatine in 7 per 1,000 of sodium chloride. Great care should be taken that the solution reached not only the subcutaneons tissue, as mentioned by Dr. Hall, but the intra-muscular tissue. He selected the upper part of the buttock, carefully avoiding the neighbourhood of the sciatic nerve. The solution must not be too much heated, otherwise the parts around would be irritated. There was no pain if the skin had been previously frozen with chloride of ethyl; then plunging the needle 2 inches deep into the muscle caused no discomfort. He would not go into the technique of the operation, but there were numerous tricks in it only to be learnt by practice. Lancereaux's original papers were not easy to get at; but he found in the last number of the 'Practitioner' a quotation about the method, which stated that it had not been so successful in other people's hands as in its originator's, and Lancereaux complained that it had not been thoroughly carried out. That he (Dr. Maguire) thoroughly believed. He was not inclined at first to believe that aneurysms could be cured by the method, but he was now quite sure of it. In his cases he had made four injections, one per day on four consecutive days; then he waited a fortnight and repeated them. In his last case he was now waiting to see whether any more would be required, but he thought not. As to the symptoms by which cure

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could be recognised, Lancereaux's details were very meagre, and he had tried to make his own records more accurate. He thought there was no question about there being consolidation in the aneurysms he had so treated.

He would mention specially the first case, as it was very instructive. The patient came because he had something wrong with his voice, and by the character of his cough it was noticed that he must have paralysis of the left vocal cord. This was found to be so, and examination of the chest revealed an aneurysm. That was the case in which he was compelled to carry out the treatment. There was considerable dilatation of the heart, a systolic murmur was heard at the apex, which was far out in the axilla. A diastolic murmur was heard at the aortic cartilage and carried down the centre of the sternum. After the first injection he was certain there was a change, and after the third and fourth there could be no doubt about it, especially in the cardiac conditions. The aortic diastolic murmur had disappeared, and so had the systolic murmur at the apex of the heart, the heart itself having resumed its normal position. He thought the aortic diastolic murmur had been due to the stretching of the aorta by the aneurysm, that the systolic murmur at the apex was due to stretching of the left heart by the tension, and that both those conditions had been relieved and their signs had therefore disappeared. The first, second, and third cases showed paralysis of the left vocal cord. There was slight improvement in the voice in the second and third cases, but he could not say so in regard to the first case. In the fourth case, which he had just seen, there was no question about the improvement. The area of dulness was diminished, and that was well borne out by comparison with the area mapped out by a doctor at Singapore 18 months previously. There had been dulness in the mid-scapular region, accentuated second sound and diastolic shock, but no aortic regurgitant murmur. There were most of the signs of aortic aneurysm, especially distension of the left heart and pressure upon the nerves somewhere between the sixth and the tenth dorsal vertebræ, where the pain was felt. He (Dr. Maguire) resisted the temptation to give him morphia, and there was no doubt pain was relieved by the injections. He had not given the patient any medicine internally, and he felt no doubt that the benefit was due to the injection. Further details he preferred to reserve. He would reply to Dr. Hall's question whether Lancereaux's method was safe. There were of course many points in the technique which each would have to find out for himself, as he had done. But there were many difficulties, and the last was that the gelatine coagulated in the needle, owing to the latter having to be passed through frozen tissue. The injection should be carried out as rapidly as possible to avoid this. His conscience was clear about the first case, yet the patient died with tetanic symptoms. He did four injections with a syringe; he had not then the flask. He was most careful, he boiled everything used, and was as careful as possible about asepsis. There was no trouble in connection with the wounds. The first injection was on a Saturday and the last on Tuesday. On the Saturday morning following he was sent for and found the patient dying with tetanic symptoms, to which he ultimately succumbed. There was only one possible explanation that he could think of, namely, that the patient's room was practically buried in a garden, and it was well known that the habitat of the tetanus bacillus was garden soil. He thought it only right to give the full history and the melancholy ending, although the aneurysm was distinctly benefited.

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The PRESIDENT said they would be very grateful if Dr. Maguire would communicate further particulars of the cases at a future meeting.

Dr. SANDERSON said he had only one remark to make on the Tufnell treatment, namely, that he thought a very neurotic person was not a fit subject for it. In the case mentioned by Dr. Hall the patient spent his days in a study of the anatomy of the thorax and its viscera, and in speculating as to whether the aneurysm would rupture into the bronchus, into the œsophagus, or into the trachea. The difficulty was to keep him quiet. In a case of that kind he thought it would be far better to let the patient move and drive about whilst leading as quiet a life as possible.

Dr. OSWALD BROWNE said it was his own good fortune to be in a measure familiar with the statistics of all the cases of aneurysms upon which a *post-mortem* examination had been performed at St. Bartholomew's Hospital during the last 30 years. It was in cases of aneurysm of the transverse portion of the arch that diagnosis by physical signs became so difficult, and where the symptoms, especially those of compression of the trachea, became of such paramount importance. Members would remember how frequently these aneurysms arose from the posterior portion of the transverse part of the arch. In nine out of 35 cases the aneurysm arose from the posterior portion. The common direction taken was either directly backwards, directly compressing the trachea (this occurred in 13 out of 35 cases), or upwards, so as to lie under the first bone of the sternum. It would readily be seen how difficult must be the discovery of those aneurysms by physical signs, and the extreme importance of symptoms of pressure on the trachea. It was not common for the recurrent laryngeal nerves to be involved. They were only involved in three out of the 35 cases. Death usually resulted from asphyxiation due to increasing pressure on the trachea (in 15 out of 35 cases). He thought that this indicated the uselessness, in the majority of cases, of performing tracheotomy for the relief of dyspnœa. He had that day refreshed his memory of a case which markedly illustrated the importance of the *symptoms*. He had delegated to a friend the seeing of his out-patients at the Hospital for Diseases of the Chest in City Road. Later in the afternoon he found him with three or four patients before the fire, the diagnosis of one of which was emphysema. At that moment the man gave a single inspiratory croak which led him to question the diagnosis. He was admitted to the hospital and remained there until his death four weeks later. There was impairment of resonance over the first bone of the sternum, but no other physical sign. Examination of the larynx showed it to be normal. On only one occasion (after the laryngoscopic examination) did the inspiratory croak recur. After 25 to 26 days in hospital he suddenly had a very severe attack of paroxysmal dyspnœa. He was suddenly called, and met the resident medical officer carrying the tracheotomy instruments. He advised they should not be used, but that venesection should be carried out. This gave great relief and the attack subsided. Next day there was a recurrence, but less severe, and the same thing happened on the third day. On the fourth day he was discussing in his house with his surgical colleague the possibility of surgical interference. They agreed that this was impossible, but terminated the discussion by going in a cab to the hospital, where they found the patient in another attack of dyspnœa, in which he died.

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Tracheotomy was performed. After death there could be felt compressing the trachea above the bifurcation a small tense tumour. *Post mortem* there was seen to be an aneurysm about the size of a Tangerine orange springing from the posterior wall of the transverse portion of the arch of the aorta, half way between the origin of the left carotid and the left subclavian, passing directly backwards, and immediately compressing the anterior wall of the trachea. The occurrence in Dr. Hall's case of signs of compression of the œsophagus would have suggested the extension of the aneurysm to the third or descending portion of the arch. It was most rare for compression of the œsophagus to occur in aneurysms of the transverse arch, whereas in aneurysm of the descending portion it was an event of by no means uncommon occurrence (in five out of 21 cases).

With regard to treatment, he agreed as to the difficulty of carrying out Tufnell's treatment, and in his experience the results were unsatisfactory, but he had successfully treated a case with chloride of calcium. A case was admitted to the Metropolitan Hospital by Dr. Cautley of aneurysm of the abdominal aorta, the exact details of which he did not remember. The patient was a man, aged 32, with an expansile pulsating tumour the size of a cricket ball, which could be felt in the epigastrium. He had extremely severe attacks of abdominal pain, which were only relieved by large subcutaneous injections of morphia. He was in hospital five months, and was kept as far as possible absolutely quiet, his temperament being conducive to such treatment. Tufnell's treatment was not attempted, but he was put on 20-grain doses of calcium chloride three times a day. A month later very little pulsation could be felt, and on leaving the hospital after five months they thought him absolutely cured. There was no pulsation, and during three months he had had no recurrence of pain. Since then he had for two years been on full duty as a conductor in the service of the North Metropolitan Tramways Company. He therefore thought that was a case which might be fairly said to have been cured—he would not say by the chloride of calcium, but certainly after treatment by that drug.

December 10*th*, 1900.

ADJOURNED DISCUSSION ON THE DIAGNOSIS AND TREATMENT OF INTRA-THORACIC ANEURYSM.

Dr. J. Kingston Fowler said he regretted that an unforeseen engagement had prevented his hearing Dr. de Havilland Hall's paper, therefore he had to rely upon the reports in the journals, which were necessarily somewhat abbreviated.

Dr. Hall left for discussion certain questions, and he (Dr. Fowler) proposed to follow them more or less closely.

The first was as to the diagnostic value of the diastolic thud. He thought they were all practically agreed on that point, namely, that it was a sign of very great value. He did not know that it was present in any other condition than aneurysm.

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As to the value of tracheal tugging, he was not in agreement with Dr. Hall, who was reported to have said that he had not found it of much assistance. He (Dr. Fowler) had watched for the sign very closely since it was first noted by Surgeon-Major Oliver many years ago, and it had never misled him. When the sign had been present, the case had invariably proved to be one of aneurysm. By tracheal tugging, he meant a very definite tug or marked downward pull of the cricoid cartilage and the trachea when the head was thrown back and the cricoid pressed upwards with the fingers and thumb. He recently saw a case which presented some difficulty in diagnosis, and on which various opinions had been given. The absence of the tracheal tug in that case, when it was quite clear that a tumour of some kind must be in contact with the trachea, and almost certainly in contact with the left main bronchus, he considered should exclude a diagnosis of aneurysm, and the tumour proved to be a malignant growth. He regarded tracheal tugging as a sign of great value. The only case with which he was acquainted—he did not see it himself—in which the sign had proved misleading, occurred at the Brompton Hospital, and was observed by many who were competent to judge. In that case there was a growth, which almost surrounded the aorta, and was also attached to the trachea. It was easy to understand how movement might be communicated to the trachea by the pulsations of the acrta under such conditions.

Regarding the value of the Röntgen rays in diagnosis, he had had little experience. He had never yet seen a case in which the Röntgen rays had proved the presence of an aneurysm which was not diagnosable by the ordinary means. He did not, however, suggest that such cases did not occur. He felt that if the Röntgen rays were used the very best apparatus was necessary—a coil capable of giving a 10-inch spark and a first-rate screen. His friend, Mr. Wilson Noble, the President of the Röntgen Society, had some of the best apparatus he had seen, and certainly with that it was possible to observe the pulsations of the auricle and ventricle, the movements of the liver and of the diaphragm, and the outline of the lungs.

The next point for discussion was, if the Tufnell treatment were adopted, how long should it last, and should it be continuous, or intermittent? He thought it difficult to lay down any general rule; every case should be treated on its merits. The longest period over which he had known the treatment faithfully and rigidly carried out was three months. Osler describes a case in which it was continued for 100 days, and all the signs appeared to indicate that clot was forming in the sac of the aneurysm. The patient died, however, and at the *post mortem* the sac of the aneurysm proved to be completely free from clot. Some years ago he saw an abdominal aneurysm treated by Mr. Hulke by the Tufnell method for a considerable time. The patient died from rupture of the sac into the general peritoneal cavity, and no clot was found in the sac. One condition he thought was a contra-indication to the use of Tufnell's method, viz., the presence of aortic regurgitation. In the case just referred to, in which the Tufnell treatment was rigidly carried out for three months, the patient, who was a barrister and a very quick-witted man, had read up the subject of aneurysm, and insisted upon carrying out the treatment against the advice of his physicians. He suffered agonies from thirst, and wasted considerably owing to the small amount of food which he took. He constantly kept a pebble in his mouth to help to allay his thirst. The result was that the prolonged rest and the small quantity of food taken broke down the compensation of the left ventricle,

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and intra-cardiac thrombi formed. These became dislodged and the patient died from embolism of the left middle cerebral artery. In doubtful cases, *i.e.*, where there was a doubt as to whether aortic regurgitation was present or not, a distinct to-and-fro murmur about the aortic orifice was a clear proof of aortic regurgitation, particularly if it occurred with hypertrophy of the left ventricle. Aneurysm *per se* very rarely, in his experience, led to hypertrophy of the left ventricle, neither did aneurysm give rise to murmurs having a definite to-and-fro character, but there might be a whirling murmur which lasted apparently into the diastole in aneurysm near the orifice of the aorta.

As to how long the treatment should last, he could not say. The patient's own idiosyncrasies had to be considered. He believed it should be continuous rather than intermittent.

Next, as to the quantity of liquids and solids to be given. When he had adopted Tufnell's treatment he had prescribed the quantity of solids and liquids which Tufnell mentioned, namely, solids 10 ounces, liquids 8 ounces. He believed that all the benefit of Tufnell's method could be obtained if the patient took a larger quantity of both solids and liquids. He might say in passing, that physicians often failed to obtain such definite scientific results as they might, owing to the fact that systems of treatment consisting of several factors were so frequently employed in place of one method at a time. For example, a patient was put to bed, kept completely at rest, the solids and liquids were restricted, and iodide of potassium was administered. Under such circumstances, it was exceedingly difficult to determine how much of the improvement which ensued was due to any one of the means employed. If they placed the patient at rest and ascertained definitely what that did; then, if he had pain, administered iodide of potassium—which had a great effect in relieving pain—the result of that could be seen; then, if he did not improve, they might perhaps put him upon a modified Tufnell treatment. That would enable them to have clearer ideas of the relative value of the components of the treatment of aneurysm.

He could not say whether there was any evidence in favour of the employment of calcium chloride, as he had not tried it.

With regard to Lancereaux's method, which was the one attracting the most attention at the present time, he had had under observation three cases which had been treated on that plan. One was under his colleague, Dr. Cayley, and the other two were under his own care in the Middlesex Hospital. He would briefly read the notes of the cases :—

Case 1. — Male, aged 44, a road scraper. Attributed condition to repeated blows on chest from scraper. No history of syphilis. Ascending portion of arch affected; aneurysm of sacculated variety; onset of symptoms said to have been sudden, duration six months; sac bulging in third right interspace; aortic regurgitation present; tracheal tugging well marked.

Injections of gelatine :—

			Quantity.	Strength.
June	2nd, 1900	....	150 cc.	2 per cent.
„	7th, „	....	150 cc.	2 „
„	13th, „	....	150 cc.	2 „
„	21st, „	....	150 cc.	2 „
July	25th, „	....	60 cc.	5 „
August	1st, „	....	180 cc.	5 „
„	14th, „	....	200 cc.	5 „

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August 22nd.—Pain in chest and signs of extension of aneurysm. Coagulating point of blood :—

July 20th	....	....	....	3′ 15″.
„ 25th	....	....	....	2′ 45″, five hours after injection.
August 1st	....	....	....	2′ 53″ „ „ „

November 1st.—Discharged at own request.

Case 2.—Female, aged 48, admitted May 24th, 1900. No history of syphilis. Duration of symptoms apparently two years; aneurysm of transverse portion of arch; no aortic regurgitation; sac projecting slightly to left of sternum.

June 11th.—150 cc. of 2 per cent. solution of gelatine injected into buttock.

June 16th.—Complained of neuralgic pains in both temples.

June 17th.—4 p.m. vomited slightly; faint; immediately afterwards threw up both arms and exclaimed "I am dying"; no alteration in action of heart or in condition of pulse. 5 p.m. became unconscious. 6.30 p.m. unconscious; restless; collapsed; face and mucous membranes blanched; extremities cold; temperature 95° F.; no signs of intra-thoracic hæmorrhage or of hemiplegia. 10 p.m. consciousness returning; asked for bed-pan.

June 18th.—Severe pain at back of the head and down the neck; yawning and sighing frequently.

June 19th.—Pain continues severe.

June 21st.—Quite conscious; pain still present and persisted for five days subsequently.

By July 6th the patient had completely recovered from the attack.

About this time Dr. Fowler became aware that a patient under treatment by Lancereaux's method, in Paris, had died suddenly from cerebral embolism after symptoms closely resembling those just narrated.

This patient (Case 2) was discharged on August 30th, no obvious change having occurred in the sac of the aneurysm during her stay in hospital.

He was influenced by what occurred in Case 2, and by his reading, in restricting the number of injections in Case 1. He felt fairly certain at the time that the injection had something to do with the symptoms which followed; still, that was a question open to argument.

Case 3.—Male, aged 52, under the care of Dr. Cayley, Middlesex Hospital; admitted July 25th, 1899. Occupation previously that of a carman, is now a stableman. Had acute rheumatism in 1891; heart said to have been affected at that time. 1895, onset of symptoms of aneurysm; was in University College Hospital, under Dr. Sidney Ringer, for three months, and was treated on Tufnell's plan; he derived much benefit, and on his discharge returned to his former occupation. Five months later had a recurrence of pain and other symptoms, and became an in-patient in St. Mary's Hospital. He remained there six months, and was subsequently able to follow his occupation with a fair degree of comfort for 12 months. He was then again in University College Hospital for three months. The swelling of the chest was first noticed 18 months ago.

Present condition.—There is a large pulsating sac extending from the first to the fifth cartilage on the left side of the sternum.

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February 3rd.—Milk diet; confined to bed.
Injections of gelatine :—

		Quantity.	Strength.
February	5th	220 cc.	2 per cent.
„	9th	220 cc.	3 „
„	16th	1 oz. (failed).	3 „
„	20th	200 cc.	5 „
„	28th	250 cc.	5 „
March	3rd	300 cc.	5 „
„	9th	300 cc.	10 „
„	14th	210 cc.	10 „
„	20th	150 cc.	10 „
„	27th	250 cc.	10 „
April	4th	230 cc.	10 „
„	10th	20 cc. (failed).	20 „
„	25th	180 cc.	20 „
May	4th	160 cc.	20 „
„	10th	90 cc.	20 „

May 24th.—Aneurysm extending.

June 6th. — Discharged; no obvious result obtained from the injections.

This patient is now (December, 1900) again in the Middlesex Hospital. The sac is of enormous size; subcutaneous hæmorrhage occurred over a prominent area of it some time ago and rupture seemed to be impending, but this has not yet happened.

That was his experience of Lancereaux's method of treatment. He saw that his friend Dr. Maguire reported cases in which the results obtained had been of a more favourable character. Dr. Fowler thought the man he had brought to the meeting (Case 1) might possibly be induced to undergo further treatment; his case was a more hopeful one, as the aneurysm was in the ascending part of the arch, and probably had not a very large mouth. Beyond certain symptoms of pain and a slight increase of temperature, he had reacted well to the injections. He felt fairly certain that when there was a very large sac, and there was no evidence that it contained clot and probably had a wide mouth, treatment either by Tufnell's method or by injection was very unlikely to be successful. The probability was that in the majority of cases where laminated clot was present in the sac, it was there before treatment was commenced. Probably it might be increased by the treatment, but he doubted whether it could be created by it. It was possible to form an opinion as to the size of the sac, and whether it contained laminated clot. If, for example, there was evidence of a very large tumour in the chest, by displacement of organs or by the presence of a large area of dulness on percussion, with very little expansile pulsation, and without any erosion of ribs or cartilages, the probability was that the sac did not contain laminated clot. A sac which had a very thin wall lacked the eroding force of one which contained a considerable amount of laminated clot, and was very hard. In a case in the Middlesex Hospital recently he had made such a diagnosis, viz., that there was a large sac which contained no laminated clot. The patient died, and it was found that there was a very large sac with a thin wall, but no clot.

The judgment which one formed as to whether any improvement had resulted from the treatment of a case of aneurysm was very liable to be

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fallacious. The portion of the sac under observation was often very small, and it was quite possible that coagulation might be taking place there whilst the aneurysm was extending in another direction, no signs of the latter change being obvious.

The next point was, For what condition should tracheotomy be advised? Many years ago, when house physician at King's College Hospital, he saw the classical case under the care of Sir George Johnson. The patient had bilateral paralysis of the abductors of the glottis as a result of pressure upon one pneumogastric nerve. He believed that case established the fact that bilateral paralysis of the abductors could occur from pressure on one pneumogastric nerve. The patient had most severe paroxysmal attacks of dyspnœa. A consultation was held, and in an interval between the attacks tracheotomy was performed by Sir William Fergusson. The patient had had no sleep for two and a half days, and immediately after the operation he slept for nearly 24 hours continuously. When there was direct pressure on the trachea, and also laryngeal paralysis, he took it that it would be no use doing tracheotomy. For paroxysmal attacks of dyspnœa he had seen oxygen of great value, also injections of morphia.

With regard to the general prognosis in aneurysm of the aorta, he regarded it as better than it was generally thought to be. He had seen many cases which lasted a long time. He showed a case at the Clinical Society in 1883 of obstruction of the superior vena cava, and suggested that the cause of the obstruction was an aneurysm which had undergone spontaneous cure, and that in the process of cure it had produced obstruction of the vena cava. The symptoms began in 1877, and the patient was continuously under observation from 1883 until 1887. He saw the patient again in 1889, when no change had occurred. In 1890 he received an intimation of the patient's death in a workhouse infirmary. The *post mortem* showed that he had a cured aneurysm of the ascending portion of the arch; there had been mediastinitis, with obstruction of the superior vena cava. Death had occurred from the formation of a secondary sac. The total duration of that case was 13 years. There was a trio of well-known men in London, two of whom were, nine years ago, supposed to be in good health, whereas the third had an aneurysm of the aorta. The subject of aneurysm had passed the intervening nine years more or less in a chair. Of the other two, one had died, and one was now in exceedingly bad health. He thought that nine years ago no one would have selected the man with aneurysm as the one likely to outlive the other two, yet it seemed very probable that such would be the case.

Dr. GILBART SMITH said there could not be a more interesting subject than that under discussion, nor a more interesting case than that which Dr. Hall had brought forward. He thought he was the second to see the patient in this country. Sir William Broadbent saw him first, and said it was a case of aneurysm. The patient's distress and laryngeal cough suggested aneurysm; but on looking at the throat with the laryngoscope he concluded that the state of the larynx was due to a previous inflammatory trouble years before, and that it was rather of a specific nature. It was with that view that he advised the patient to have his throat examined by Dr. Hall. He believed Dr. Hall at that time agreed as to the condition of the throat, and there was then no paralysis of the left vocal cord. As well as he remembered, the larynx was twisted over to the left side, and when examining the chest he found no distinct evidence of aneurysm. He thought he found a shrunken left

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lung, and in support of this view there was a history of previous pneumonia on that side. His diagnosis at that time was that the patient was suffering from a shrunken left lung, which had retracted from the front of the heart and bared the pulmonary artery, and that the second very accentuated sound at the base of the heart was really an accentuated pulmonary second sound, not an aortic one. Soon after expressing that opinion the patient was seen by at least seven or eight men in London, and he believed that on one occasion they all met together. He happened to be away then. Two years after that he saw the patient again, and had seen him several times in the interval. At the later inspection he found that the impulse, which he had previously explained as due to the uncovered condition of the base of the heart, was much more definite, and there was increase of pain. There was a great nervous element in the case, because the patient was well read in all that appertained to aneurysm. He had been all over Australia, had seen everyone of note in this country, and, having heard so many expert opinions, he was far better posted up in aneurysm than probably any of the Fellows present. Thus the neurasthenic element entered distinctly into the case, and it was difficult to dissociate the pain that he complained of from the mental condition. He (Dr. Smith) began to be shaken in his diagnosis, simply because of the increase in the impulse over the left side of the chest. Perhaps the reason he was wrongly influenced in that case was due to the fact that once there was a similar dispute between himself and his colleagues about a case in which the left side of the chest was shrunken following an attack of pleurisy, and where all the signs of aneurysm were present. The patient left the hospital, but he (Dr. Smith) was so anxious about the diagnosis that he kept him mentally in view; and finally, hearing of his death at Brighton, he arranged for a *post-mortem* examination, at which no aneurysm was found. There was merely a dilated pulmonary artery, with a shrunken lung. True, there was a tugging of the trachea, but that he thought was due to the chronic inflammatory dragging, which was evident when the trachea was examined.

One of the questions asked by Dr. Hall interested him very much, namely, the influence of the Röntgen rays in diagnosis. He had seen two or three cases. That day, at the London Hospital, there was a case which they diagnosed merely as a questionable dilatation of the aorta, and yet on seeing the radiograph there was evidence of a large tumour, no doubt aneurysmal, affecting the right side. All one's cases nowadays were subjected to the radiograph, and it was a great help, for it led to diagnoses of aneurysm which otherwise would not have been made. In one case the contour revealed by the radiograph, owing to the irregularity of outline, led to the diagnosis, not of aneurysm, but of malignant disease.

Many cases had been treated at the London Hospital by the gelatine injection, but the results, in his own cases, did not lead him to think very much of the method. Some had appeared benefited, but on the whole he did not think distinct improvement was traceable to it. That day Dr. Percy Kidd had told him he had had many cases treated by the process, and that one, which had been watched for two years, was very distinctly benefited by the treatment.

As to Tufnell's treatment, he had used it for a long time. He liked to treat his patients much as he would wish to be treated himself. He would prefer to live half time and happy, than double the time and unhappy. The Tufnell treatment was very uncomfortable, and during

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the 25 years he had treated aneurysm, most of them by the Tufnell method, he had not seen sufficient benefit accrue to warrant the laying down of such rigid treatment as a rule. To keep a man fixed in a chair horizontally, in addition to restricting solids and liquids, rather tended to shorten life than to prolong it, because it took away the resisting power of his vitality. If he had aneurysm, he would prefer to move about gently and quietly, and he thought he would live longer than if fixed in a chair and half starved.

With regard to tracheotomy, no one knew better than Dr. Hall when that should be performed. The difficulty with him (Dr. Smith) was not whether to do tracheotomy, but whether he could get a surgeon to open the trachea and then to dilate it lower down where it was pressed above the bifurcation. The cases which required tracheotomy, he thought, were only those in which the larynx was interfered with. Two years ago he had a case at the London Hospital which came in with bilateral paralysis of the abductors; there was hardly a chink between the cords during inspiration. They could find no cause for that condition of the cords. Tracheotomy was done, and the patient wore a tube. A year afterwards he attended again, still wearing the tube, and then they found some evidences of locomotor ataxy—absent knee jerks, questionable abdominal crises, and fixed pupils. These symptoms increased during another year, and Dr. Head was greatly interested in the condition. During the last three months that the patient was under observation symptoms of aneurysm appeared, but they were so masked that it was a question whether it was aneurysm or some tumour affecting the right margin of the sternum. The patient died after leaving the hospital, and at the *post mortem* an aneurysm was found, and the vocal cords were seen to be doubly paralysed. At present he had a patient with aneurysm, whose left vocal cord was fixed in the cadaveric position. If the other cord became paralysed, tracheotomy would be absolutely necessary. But he could see no use in tracheotomy unless the larynx was blocked by paralysis of the abductors or by fixation of the cords. He therefore wished to know whether in such cases anything could be done by a surgeon with a view to dilating in any way a trachea which was blocked sometimes within reach, sometimes lower down.

He had no experience of the calcium chloride treatment, and he might say of all the treatments he had tried for aneurysm that they had ended pretty much in the same way—they had not achieved much. He agreed with Dr. Fowler as to the longevity of some of the cases, and that was only another reason for feeling that the life of the patient and his happiness did not require that he should be put on the Tufnell treatment.

Surgeon-Major BLACK said he had had considerable experience in South Africa up to two years ago, when he retired. He quoted a number of statistics from Army returns showing the proportions of the cases of aneurysms to those of valvular disease of the heart.

Dr. SEYMOUR TAYLOR said discussion on the present subject had occurred many times in London during the last 25 or 30 years. Although Dr. Hall had mentioned some of the cardinal signs of aneurysm, he did not think that gentleman had quite differentiated the cardinal signs of aneurysm of the aorta from those of tumour or any other new growth in the thorax. Those who were acquainted with Murchison's remarkable teaching would remember that he laid

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down four or five cardinal signs of aneurysm. All others were those which were common to new growth or tumour in the thorax and to aneurysm. He would not deal now with such signs as bulging, pulsation, and abnormal dulness, but would speak of a sign which, in conjunction with diastolic shock, was of very great importance—he referred to the sign known as the thrill. If there were reasonable ground for the diagnosis of aneurysm, the existence of thrill, to his mind, was a very fairly conclusive argument that aneurysm existed. He also looked upon it as a prognostic sign. He did not recall a single case, in which thrill was present over the sac and the patient had died, where the sac was not found to be nearly empty of clot. He thought the presence of thrill was evidence that the sac had no laminated clot. Another sign was the puffing sound from the trachea during expiration. Patients, with a sac pressing upon the respiratory tract, emitted a puffing sound which had been likened to that produced by the exhaust pipe of a stationary engine at a distance. If the ear were placed near the front of the chest it could be heard with every pulsation of the heart.

The tracheal tug was not necessarily a sign of any value to him; he believed it occurred in cases of huge hypertrophy of the heart, and many patients had aneurysm without a tracheal tug.

With regard to treatment, he did not wish to make sweeping assertions, but he did not remember any case under his own care of thoracic aneurysm which derived the slightest benefit from Tufnell's treatment. In fact, when a patient was placed in bed for the condition and kept there for six or eight months the only benefit derived was that accruing to science. It was waiting for death, and he did not know that death was not hastened by causing the patient's tissues to be less resistent.

With regard to tracheotomy, he had not had the pleasure of hearing Dr. Hall's paper, and did not know what he wished to elicit on the subject. He (Dr. Taylor) could understand that, if a man had bilateral palsy of the abductors, tracheotomy would be an advantage; but he agreed with Dr. Gilbart Smith that it was a useless procedure if the man had pressure on his windpipe below the cervical trachea; it was then a cruel operation. If they could get some distinguished surgeon to pass an artificial tube down the windpipe to dilate the passage which was obstructed by aneurysm lying across the bifurcation, well and good; otherwise he saw no advantage in performing tracheotomy, unless there was some obstruction of the larynx from spasm of the abductor muscles.

With regard to Lancereaux's treatment he could say nothing, as he had neither had personal experience nor had he seen cases upon which it had been tried.

In reply to Dr. Seymour Taylor, Dr. FOWLER explained that tracheal tugging had not been put forward as a sign of aneurysm present in all cases. Surgeon-Major Oliver, who first described it, stated clearly that it occurred when the sac of the aneurysm was in contact with the trachea or left bronchus. If an aneurysm of the first part of the arch projected forward tracheal tugging would not necessarily be found.

Dr. CAUTLEY thought the reason Tufnell's treatment was not more often successful was that it was used in comparatively unsuitable cases. The majority of cases of aneurysm occurred among the lower classes, in men in the later half of life who had had a hard time, and who, in many

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cases, had had syphilis and had drunk immoderately. Such cases naturally were unsuitable for the Tufnell treatment. On the other hand, simple sacculated aneurysm caused by strain might certainly be benefited by the Tufnell treatment. He knew of one case where the treatment was carried out thoroughly and resulted in perfect cure. If the cases were judiciously chosen it seemed that further similar results might be obtained. The case he referred to was that of a gentleman who lived a hard, active life, and hunted very much. As a result of a severe strain he had an aneurysm in the ascending and transverse part of the arch of the aorta. He was ill six months before it was diagnosed, although there was considerable pressure on the trachea and a good deal of resultant bronchitis. It was eventually diagnosed by the late Dr. Andrew. He was put upon the rigid diet, and, being a man of strong will, he carried it out absolutely. For 10 weeks he lived on it, and was on his back on a water bed during the whole of that time. At the end of the 10 weeks he was transferred from the north, where he was then living, to Torquay, and the result of the long journey was that he had severe spasm of the glottis and had to have inhalations of chloroform, but he pulled round from that. For 21 weeks he was on modified diet. The chief troubles were difficulty in taking food, and there was also intense pain on micturition. The third great trouble was insomnia. For six weeks the man never slept at all, but eventually fell asleep during a thunderstorm. He lived for 23 years afterwards, and never had a recurrence, though he had puffy swellings above the clavicle, dilated veins, and inability to stoop down. He was able, however, to do a hard day's shooting on a Yorkshire moor, but had to be careful not to walk fast. He rode again, but did not hunt. He did not think the Tufnell treatment was likely to be successful unless the patient were sufficiently strong-minded to carry it out completely.

He had no experience of the gelatine treatment, but had some experience of the treatment by calcium chloride. He had seen one case of abdominal aneurysm which was diagnosed very early. There was just a small area of dulness, pulsation, and thrill, as well as a systolic murmur, and that patient, under a modified Tufnell diet and calcium chloride, improved sufficiently to be sent out of the hospital. He came back a few months later, and the same treatment again improved the condition. That was two years ago, and the patient was still under observation, but the aneurysm had not returned.

Dr. DE HAVILLAND HALL, in replying on the discussion, said he was very pleased that the narration of his case had led to such a long discussion. He did not intend to bring up the whole question of the diagnosis of aneurysm, but, as he said in his paper, he alluded chiefly to those symptoms and signs present in the case before him. The diagnosis of aneurysm had been discussed so frequently that he thought it was hardly worth bringing forward again. He brought the case forward because the patient had seen so many physicians in London, and so many contradictory opinions had been expressed, that he thought it would be interesting to bring forward the notes of the case and show skiagrams, as well as the aneurysm itself. He was pleased Sir William Broadbent agreed with him regarding tracheal tugging. He (Dr. Hall) stated that in no case had tracheal tugging been a distinct help to him. Certainly one suggestion made by Dr. Kingston Fowler was important—that its absence might be of value in pointing out that they were probably not

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dealing with aneurysm. Sir William Broadbent laid stress on the use of iodide of potassium as against the Tufnell treatment. Certainly if iodide of potassium was going to do as much as the Tufnell treatment, let the patient have it. There was no distinct evidence that iodide of potassium alone would do that, because, in all the cases in which he had seen it employed, the patient was in the recumbent position and was undergoing a modified course of Tufnell. He would like to see a patient treated with iodide of potassium in full doses while he was going about; if there were good results he might let him have that treatment. At present he believed in a modified form of Tufnell, and was not inclined to give iodide of potassium. As he had pointed out, he believed that iodide of potassium sometimes did harm; in several of his patients it had increased thirst, which was one of the great troubles in the modified form of Tufnell. The longest time he had kept a patient on the Tufnell treatment was seven months, and he stood it admirably, without grumbling. He saw the patient in London soon after he left his bed, and he could find hardly any sign of aneurysm. The man returned to his business on the Stock Exchange, lived an active life for a year, took a holiday and over-exerted himself, came back with signs of dyspnœa, and died suddenly next day, he believed from rupture into his trachea. No *post mortem* was permitted.

As to the diagnostic value of Röntgen rays, he thought Dr. Walsham had shown—and they had had other cases also—cases in which skiagrams had been of distinct value in diagnosis. In any future cases he would use it. He thought the best apparatus and the best manipulator should be employed.

He had experienced considerable difficulty in giving advice as regards tracheotomy in cases of aneurysm. Tracheotomy was useless where there was simple tracheal obstruction; the class of cases where it might be useful was where there was double stenosis of the air passages, *i.e.*, bilateral paralysis of the abductors, and probably direct pressure on the trachea. How could they settle whether they were dealing with bilateral stenosis? It was in those cases that the respiratory excursion of the larynx was of distinct value. In two cases in which he had been called in at the last moment to decide whether tracheotomy should be performed, he based his refusal on the absence of the respiratory excursions of the larynx. In obstruction of the glottis there was an up-and-down movement of the larynx; if the obstruction were in the trachea, that was absent. He wanted to know whether his experience had been confirmed by that of others. He had alluded to a case in which tracheotomy was performed fruitlessly. In the two cases he had mentioned he was called in at the last moment. *Post mortems* were made, and in both, though there was that condition of vocal cords, the main cause of the dyspnœa was compression of the trachea. He remembered the historic case quoted by Dr. Fowler, where pressure upon one vagus was supposed to have caused the bilateral affection—it was bilateral palsy of the adductors, not spasm. The case had been discussed recently, and it was thought to have been an erroneous observation—probably the other vagus had also been involved. That view was shared by Sir Felix Semon, with whom he had recently discussed it.

With regard to Lancereaux's method of treatment, he had not been impressed by what he had heard in the room as to the results of treatment. Two fatal cases had been mentioned, so it was a proceeding attended by a certain amount of risk. He only had one case, and there was little or no pain, but there was a certain amount of discomfort. The apparatus brought forward by Dr. Maguire was best calculated to carry

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out the injection efficiently, but, provided the fluid was injected into the muscles, it did not matter much what apparatus was used.

Dr. Gilbart Smith had made some remarks about the patient they had both seen. He (Dr. Hall) saw him long before anybody else, viz., in October, 1895, whereas Dr. Smith saw him in the spring of 1896. Even in 1895 he raised the question of aneurysm, but his notes were very conclusive that he had nothing more than laryngeal catarrh. At no time was there any affection of his cord, nor was it detected by anybody else until four days before his death. At the *post mortem* the lungs were healthy, except slight emphysema. (Dr. Kingston Fowler: Do you know how long the tracheal tugging was present in that case?) He noticed tracheal tugging was present 18 months before death. There had not been much time in which to judge of the effects of treatment by Lancereaux's method, because many cases of aneurysm lasted a long time even if untreated. He agreed with Dr. Cautley as to the necessity of selecting suitable cases for the Tufnell treatment. He (Dr. Hall) thought temperament and social position should be considered. It was not applicable for a labouring man, nor for a fusiform aneurysm. He also agreed with Dr. Kingston Fowler that it was not desirable in aortic regurgitation, in which it was so important to maintain the compensation of the left ventricle.

Dr. Robert Maguire reminded Fellows that his fatal case, which Dr. Hall had mentioned, died of tetanus a week after the commencement of the injections. Sir William Broadbent, after the last meeting, asked how long the symptoms lasted, and on being told 17 hours, said that could not have been the cause of death.

Regarding the apparatus he had shown, the particular use of it was that the gelatine was got quicker into the intra-muscular tissue, and was better absorbed by the lymphatics.

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January 14*th*, 1901.

ON THE VALUE OF THE RÖNTGEN RAYS IN THE DIAGNOSIS OF DISEASES OF THE CHEST.

By E. CLIFFORD BEALE, M.B., F.R.C.P., and HUGH WALSHAM, M.D., F.R.C.P.

DURING the last three years, and more especially during the last 12 months, the X rays have taken their definite place as necessary adjuncts to surgical diagnosis, but their possible use in the diagnosis of medical cases has been studied by a few observers only—in France by MM. Oudin, Barthelemy, Bouchard, Béclerè, and Bergonie; in America by Dr. Crane, of Philadelphia, and Dr. Francis Williams, of Boston; and by a few observers—Professor Moritz, Dr. Holzknecht, and Dr. Mignon—in Germany and Italy. In our own country Dr. Hugh Walsham has been steadily pursuing the subject, and the work that he has done forms the basis of the present communication.

The skiagrams which we are about to exhibit were all taken by him on plates of 12 inches by 10 inches, and reduced to lantern size. They form a part only of a large mass of material derived from the Chest Hospital, Victoria Park, from St. Bartholomew's Hospital, and from private sources. We have to thank our colleagues and many other physicians for permission to make use of the skiagrams taken of patients under their care.

In addition to the skiagraphing of cases for permanent record, we have made a large number of clinical observations by means of the fluorescent screen, which we shall refer to as the skiascope. Opinions have differed a good deal as to the relative value of observations by the skiagraph and the skiascope respectively. To us they appear equally essential in the practical work of diagnosis. By the skiascope we obtain an immediate view of any abnormal shadows, and we see the movements of the heart and diaphragm, but the view is somewhat obscured for reasons which we shall refer to shortly. By the skiagraph we must needs have a blurred outline of the moving parts, but we get more precise information as to the position and density of any abnormal shadows, and we obtain a record for future use.

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In order to obtain any results of practical value, either with the fluorescent screen or the sensitive dry plate, it is essential that a powerful coil and a tube of sufficient penetrative power should be used. To attempt the observation of the thoracic organs with an instrument of only moderate power is a mere waste of time and energy, and doubtless many have been deterred from following up the study by reason of initial failures brought about by the use of too feeble appliances.

The induction coil used in our observations is one giving nominally a 12-inch spark, but when worked at high pressure is capable of giving a spark 14 inches in length. The coil is worked by two four-cell accumulators of 21 ampère-hours capacity with an electromotive force of 16 volts. It will, perhaps, be best at the outset to say a few words on the general technique of taking a skiagram of the chest.

The patient lies on a couch in the prone position with arms and chin well over the edge. The plate, enclosed in the usual opaque envelopes, is then placed on a board to prevent breakage, and slipped under the chest of the patient. The tube is then placed above the chest with the anticathode vertical to the plate. The height of the tube above the plate after a certain distance matters but little. We generally work at from 3 feet to 3½ feet, or even 4 feet, above the plate. If it be important to show the apices of the lungs the tube must be placed nearly vertically over the neck of the patient, but for a general view of the chest the level of the fourth dorsal vertebra is best. The time of exposure must necessarily vary with the patient. Very fat or very muscular patients will require a longer exposure than thin ones. Age and sex must also be taken into account. Most of our cases had about two minutes' exposure on the average.

If we want to take a stereoscopic picture of the chest the procedure is somewhat different. For this purpose a special apparatus, invented by Dr. Mackenzie Davidson, is required. The base is formed by a stout wooden frame covered with parchment. An upright carries a graduated horizontal arm, which can be raised or lowered until the tube is at the desired height above the photographic plate, which is placed beneath the parchment frame and kept in position by means of a lever and screw. The tube is now adjusted so that the anticathode is vertically over the spine of the patient as his chest rests on the parchment frame. The

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tube is now displaced 30 mm. to the right of the zero division on the scale, and a skiagram taken. Another plate is now placed in position beneath the parchment frame without disturbing the position of the patient. The tube is now displaced 30 mm. to the left of the zero point, and a second skiagram taken. Two negatives of the chest are thus taken from two different points of view 60 mm. apart. If prints be then prepared from the negatives and placed in a Wheatstone's reflecting stereoscope, a stereoscopic picture of the chest will be obtained, always provided the observer has binocular vision.*

A word may not be out of place with reference to the production of a dermatitis by exposure to the X rays. That a severe dermatitis may be produced by prolonged and repeated exposure to the rays is now beyond question. Three or four such cases have been seen by one of us where the rays were used therapeutically. But the introduction of large coils have so shortened the exposure that, as far as the chest work is concerned, there is not the slightest danger to the patient to be apprehended from an exposure necessary to obtain a good skiagram of the chest.

A practical point of considerable importance has to be borne in mind in all skiascopic observations of the chest, viz., the distance at which the tube can be placed from the chest wall. The brilliancy of the fluorescence is greatest when the tube and the screen are only a few inches apart, and it diminishes in proportion to the distance which separates them. In the case of flat objects, such as the hand, the fluorescence is still brilliant enough for all practical purposes when the tube and the screen are several feet apart, but in the case of the chest the degree of possible separation is limited. We have generally found that the tube cannot be placed at much more than 6 inches from the chest without loss of brilliancy of the fluorescence and consequent loss of definition of the shadows. But with the tube so near to a thick object such as the chest, the tissues nearest to the tube cast magnified shadows on the screen while those nearest to the screen cast shadows of normal size. And in proportion as the shadows are magnified so they appear less dense and with less clearly defined outline. This may best be seen by the

* Those who have had the opportunity of seeing Dr. Mackenzie Davidson's stereoscopic skiascope cannot fail to recognise that he has put into the hands of the profession an instrument that may be of the greatest service in elucidating obscure cases of thoracic tumours and other morbid conditions.

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simple expedient of placing two coins of equal size upon the chest walls, back and front. It is at once seen that with the tube close to the chest wall the coin lying nearest to it appears to be twice the size of the other. Even when the experiment is repeated at a considerable distance from the tube there is still a slight degree of difference which must be taken into account in interpreting the shadows of the thoracic contents as they appear upon the screen or the skiagram.

It may therefore be assumed that a clearly defined shadow is cast by an object lying close to the screen, and that obscured definition may be due to the fact that the object by which the shadow is cast lies on a plane nearer to the tube. It is therefore obvious that for correct interpretation of shadows it is necessary to examine from the back as well as from the front, the tube being maintained at a uniform distance from the body. In skiagraphic observations this is of less importance, because the tube can be placed at a greater distance from the chest wall if a longer exposure of the plate be given.

Diagonal observations, looking through the chest from the right or left front to the opposite side of the back, may sometimes be of service. Dr. Holzknecht, of Vienna, and Dr. Mignon, of Nice, have made many independent observations on this point. The heart can be seen by this method with clear spaces in front and behind it, the other limit of the posterior space being formed by the shadow of the spine, which includes those of the aorta, vena cava, and œsophagus. Any opaque object projecting from any of these structures would obliterate this clear space. We have only made a few investigations upon this point as yet, but they go to prove that the clear spaces are not uniformly to be seen in adult chests, and therefore some doubt may attach to the causation of opacity—but further observations are needed.

On examining an unknown case for the first time with the skiagraph or skiascope, the question arises, as in all methods of clinical examination—Is there any variation from the normal? If so, what form does the variation take? To answer these primary questions it is obvious that the shadows cast by the normal thoracic contents should be clearly defined and recognised.

If we examine the skiagrams of the normal chest (*see* Fig. 1) it will be seen that certain definite and some indefinite shadows appear, more or less, in all of them. The shadow of the heart is,

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of course, at once obvious. The shadow cast by the liver and the diaphragm appear in most, and are generally blurred owing to the respiratory excursions. There is always a shadow on either side of the sternum, presumably cast by the sternum itself and by the mediastinal contents.

Over and above these normal well-defined shadows there appear in most of the skiagrams certain "streaks," which are generally vertical in the picture, and are situated parallel with the right side of the cardiac shadow and both sides of the mediastinal shadow. These, which for descriptive purposes we may term "cardiac streaks" and "mediastinal streaks" respectively, must be regarded

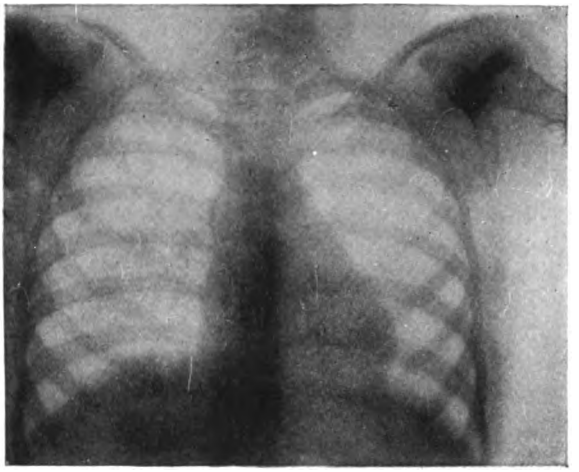

FIG. 1.

as normal and are in all probability produced by the pericardium and visceral pleura covering the anterior free borders of the lungs. In order to test the question four skiagrams were taken of the body of a boy who had died of heart disease—the first with the body unopened and placed on the plate in the same position as in the living cases; the second with the chest opened and the heart alone removed, the body lying on its back; the third with the lungs removed, but the pericardium left in position, some blood being allowed to lie in the thoracic cavity; and in the last skiagram the thorax was carefully cleaned out, the pericardium alone remaining with the upper mediastinal contents undisturbed. In

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all these the streaks are plainly visible, and are much more clearly defined than in the living subject, where they must of necessity be blurred by the respiratory and cardiac movements. The recognition of these streaks as normal is of considerable importance in the interpretation of skiagrams of incipient disease, as will be seen in some of the subsequent plates. A few other normal shadows must be recognised, although they do not appear with equal regularity in all the pictures. These are the shadow of the scapula, of the anterior axillary fold, and of the nipple in women with large mammæ. These can all be easily identified when using the screen by moving the arms, or by tracing the nipple shadow with a metallic probe between the screen and the patient, but in the skiagram they are not always so easy to fix with certainty. In the adult chest generally the shadows are less well defined, and the bright parts less translucent than in the young. Very muscular men or very fat women are more opaque to the rays than thin people, but in the diagnosis of tubercular disease, at any rate, this difficulty does not often arise.

On examining a chest from behind the question of magnification has to be particularly borne in mind. The heart shadow always appears indistinct and much enlarged.

Tubercular Disease.

That tubercular changes in the lungs are capable of throwing shadows has been long recognised, but it has not yet been clearly shown that the shadows are produced by actual tubercular deposit. In order to test the question Dr. Walsham has made careful examinations of pure cultures of tubercle bacilli and failed to obtain any recognisable shadow. He has further examined fresh deposit of miliary tubercle in thin tissues, such as the intestine, round and about a tubercular ulcer, also without definite result. Skiascopic examination of thin layers of mucous membrane from the larynx infiltrated with tubercle failed to detect any distinctive shadow.

In lungs removed from the body, the shadows cast by aggregated miliary tubercle are very distinct. Note especially the dark shadow of the caseous bronchial gland, indicated by a pin. In order to eliminate the influence of the red blood cells, two lungs equally stuffed with recent tubercle were examined, the one just as it was removed from the body and the other after soakage in water and

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thorough squeezing and washing till no more colour could be obtained from it. In the picture it is indicated by the coin lying close to it. It will be seen that there is but little to choose between the shadows cast by these lungs, and therefore it may be assumed that the fluid blood in the tissues may be disregarded, and that the shadows are thrown by the new cellular elements. It is probable that a definite degree of aggregation of new cells must have taken place before any visible shadow is cast. Our experience thus far, however, fully confirms that of other observers, and notably that of Dr. Francis Williams, that such shadows can be seen in the lungs before the presence of any pathological change can be detected by the methods of auscultation or percussion.

In the case of a little girl admitted under the care of Dr. Eustace Smith, the clinical symptoms pointed to acute tuberculosis, and the diagnosis of that disease was made, but for a long time the physical signs remained equivocal. When the evidence of skiagraphy was appealed to, the physical condition was at once made obvious, as will be seen by the skiagram. It will be noted that the normal translucency is lost and that shadows are faintly scattered throughout both lungs, but that a good deal of translucency is still retained, indicating the fact, subsequently proved on the *post-mortem* table, that the tubercular deposit was finely nodular and not as yet agglomerated. In another case, examined by the skiascope but not skiagraphed, the examination was made after death, before the body was opened. The whole of one side of the chest was seen to be speckled over with fine streaks and dotted shadows, and the pathologist's examination made at once showed the lung to be infiltrated throughout with fine recent miliary tubercle. In this case there were only a few localised pleuritic adhesions which did not appear to be of sufficient density to cast a shadow.

Assuming, then, that a definite shadow may be thrown by a very small tubercular deposit, it is obvious that the skiascope and the skiagraph are capable of demonstrating and recording precise information not only as to the presence of disease but also as to its extent. Still more important, from the patient's point of view, is the information afforded that no disease is present where from general symptoms its presence might have been suspected. That this information is trustworthy is borne out by the observations of many of the French observers who have watched suspected cases for a long time, and if time would permit, we might quote several cases

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under Dr. Walsham's care as out-patients, examined by both of us at intervals, in which the negative evidence given by the skiascope and the skiagraph has been fully confirmed by the clinical evidence. The two cases now shown were both suspected but no signs could be discovered.

In cases of unilateral disease the evidence of the rays is often most valuable, especially where the ordinary physical signs are modified by the presence of obsolete tubercle or dense adhesions. We shall have occasion to refer to the subject of adhesions in dealing with pleuritis. [Lantern slides were shown of cases in

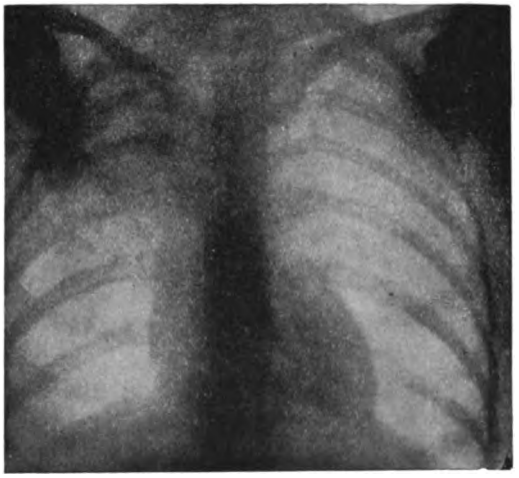

FIG. 2.

which the physical signs pointed to disease of one side only, but where the skiascope proved the existence of a lesion at the other also (*see* Fig. 2).] In many instances the converse has been found. No shadow had appeared where, from feeble breath sounds or other indications, disease has been suspected. Without claiming that the absence of the shadow proves the absence of disease, we think it is fair to assume with our present knowledge that any tubercular deposit that may have begun can be but slight in amount, and hence amenable to treatment, whereas the appearance of a shadow would indicate that the tubercle has already attained considerable proportions.

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In studying the shadows thrown in advanced cases it will be noted that they are much more dense and flocculent than those cast by more recent deposit. In a previous skiagram the shadow of a caseous bronchial gland was seen to be very dense, and in all our observations of caseating tubercle, whether in the dead or the living subject, we have noted this increased density (*see* Fig. 3). The shadow cast by pus when removed from the body is very dark, and is darker in proportion to the cellular elements which it contains, the shadow of sero-pus being very much less dense. It is therefore safe to assume that collections of leucocytes throw definite shadows, and that these shadows vary in density according to the

FIG. 3.

aggregation of the cells. If this be the case it is obvious that for the diagnosis of caseation or of localised collections of pus in the pleural cavity or for abscesses anywhere within the thoracic cavity, the skiascope will give more trustworthy information than the ordinary means of physical examination at present employed.

Even through such dense tissue as that of the kidney the shadow of caseation can be detected. Cavitation, on the other hand, is indicated by a return of translucency in the midst of the flocculent shadow (*see* Fig. 4). A possible source of fallacy must, however, be noted here. In some slides there appear two clearly defined translucent spaces at the apices somewhat resembling cavities, but they

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are not surrounded by any darker shadows, which would be the case if they were due to cavities in the midst of caseous or fibroid changes. A dense homogeneous shadow is cast by the consolidation produced by acute pneumonia. It is not flocculent, as in the case of tubercle, nor does it completely obliterate the shadows of the ribs.

Fibroid changes throw definite shadows after they have arrived at a certain degree of density, but they appear less flocculent than the shadows cast by miliary or caseating tubercle. [A slide was shown in which there was marked chronic fibroid disease, and the heart was drawn completely over to the right side. The retraction

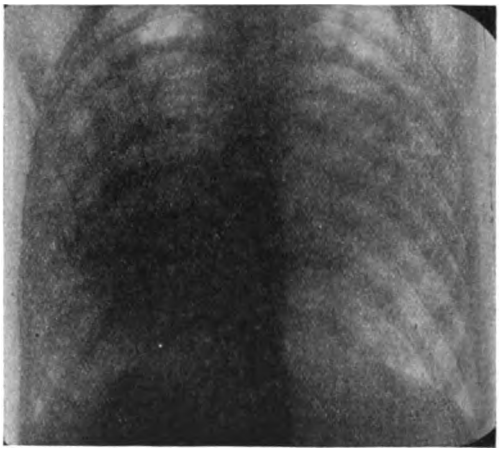

FIG. 4.

of the whole of the right side and the corresponding fulness of the left side were well seen.]

Emphysema is indicated by greater translucency of the affected part of the lung. The alteration in the shape of the bony framework of the chest can be clearly detected by the skiascope.

Increased translucency may be noted in such cases on deep inspiration, and this is sometimes of assistance in doubtful cases, where the patient is able to take a deep breath and hold it for a few seconds.

In the interpretation of all skiagrams it must be remembered that a long exposure may obliterate some of the faint shadows. Two

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slides were shown in illustration of this point. The case was one of advanced phthisis, since dead. The first picture had two minutes' exposure, the second five minutes. In the two pictures shadow corresponds to shadow, but the shading is less dense in the one exposed for the longer period.

In the diagnosis of morbid conditions of the pleural cavity, skiagraphy may be of considerable service—more, perhaps, as indicating the extent of disease than as showing its presence. In cases of recent pleuritis without effusion we have not been able as yet to demonstrate any clearly defined shadow, although a very faint shading has been observed. Nor do light adhesions appear to stop the passage of the X rays; it is only when a certain degree of density has been reached that a well-defined shadow is cast. It is probable that any cellular deposit, such as tubercle or cancer, would be recognisable, but we have not yet had the opportunity of testing the question.

A moderate amount of serous fluid may also escape detection by the rays. It is only when a considerable effusion of fluid has taken place, or when the pleura is materially thickened by inflammatory deposits, that a recognisable shadow can be seen. The shadow cast by serous pleuritic fluid is at the best a faint one, and not to be compared in density with the shadows thrown by solid inflammatory products or by pus. The outlines of the ribs are not fully obliterated, and it is only when the upper margin of the shadow is clearly and abruptly defined that the diagnosis of fluid can be made with any degree of certainty. The position in which the patient is placed for the purpose of observation must be taken into consideration as influencing the position of the upper shadow line.

An elaborate paper on the subject of skiascopy in the diagnosis of diseases of the pleura appeared in the 'Archives of the Röntgen Society' in February last, by MM. Bergonie and Carriere. These observers concluded that pleuritic fluid casts an appreciable shadow on the screen, but that the shadow of serum is denser than that of pus. This conclusion is so exactly opposed to our own observations that we cannot help thinking that the report of their paper must be incorrect. A test tube full of pus throws a shadow almost as dark as that of a bone of equal calibre, whereas the shadow thrown by a tube of serum is but little darker than that of an empty tube.

In a well-marked case of empyema the shadow will be seen to be very dense; the outline of the ribs is lost, and the picture altogether

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is very different from that of the serous effusion. The skiagram of the same case after recovery proves that there is no appreciable thickening of the pleura. The track of the healed sinus can be seen.

Density of shadow alone is not altogether trustworthy. In a case of serous effusion with densely-thickened pleura the shadow may be as dense as that of pus.

Diseases of the Heart and Great Vessels.

In the diagnosis of morbid conditions of the heart the X rays have not as yet afforded us much information that cannot be obtained by the older methods, but it is probable that much will be derived from the closer study of the movements of the normal and morbid hearts respectively, now that it is possible to watch such movements by means of the skiascope.

Even in cases of morbus cordis, where the physical conditions are fairly obvious, it is no small satisfaction to be able to verify one's conclusions as to the size, shape, and position of the heart by actual inspection.

Perhaps the most striking example of the diagnostic value of skiascopy is to be found in the case of thoracic aneurysm. The uncertainty of positive diagnosis in such cases is only too well known. Ordinary clinical methods give us good grounds for suspecting the presence of aneurysm, but they are often only able to indicate that some source of intra-thoracic pressure is present. In a case recently under observation no more definite evidence could be obtained, after careful physical examination, than paralysis of one vocal cord (*see* Fig. 5). By means of the skiascope the diagnosis was made in a moment, for the pulsating shadow could be distinctly seen, and by examining from back and front its size and position could be approximately determined. In another instance, examined at the same time in the presence of some of our colleagues, an aneurysm, which had been diagnosed as occupying the upper part of the chest only, was found to be of enormous proportions, which had not been indicated by any of the usual physical signs.

In all cases of aneurysm it is of no little importance to be able to say with certainty what may be the relation of the heart to the tumour. Any alteration of shape or displacement of the heart can be seen at once.

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It is, further, of the greatest importance that we should be in a position to determine with certainty whether an aneurysm is full of clot and moving but little, or whether it is relatively full of fluid blood and pulsating very freely. It will be remembered that fluid blood is much more transparent to the rays than blood-clot. If, therefore, the shadow of an intra-thoracic aneurysm appears to be hazy and ill-defined when looked at both from the back and the front, it must be assumed that but little clotting has taken place, whereas a dense and well-defined shadow would indicate the presence of a more or less dense clot.*

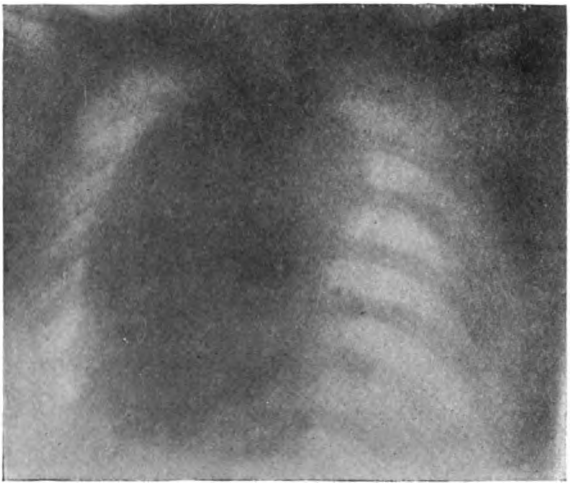

FIG. 5.

The detection of morbid growths and their diagnosis from aneurysm is greatly facilitated by the use of skiascopy. This question arose in the case now shown, a patient under Sir William Church. This case, on *post-mortem* examination, proved to be an aneurysm, which had burst into the pericardium.

The absence of pulsation, the ill-defined edge of the shadow, taken together with other clinical evidence, will generally decide

* In a few instances we have met with a definite rounded pulsating shadow projecting from the shadow of the spine at about the level of the third dorsal vertebra on the left side. Occurring in the persons of young subjects without any other evidence of disease of blood-vessels, these projections are not easy of explanation.

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the question, but it must be admitted that cases are already on record where growths have been thus mistaken for aneurysm.

Another morbid condition within the chest which is always a source of difficulty in diagnosis, is enlargement of bronchial and other glands. The mediastinal contents, as already pointed out, throw a shadow which must be regarded as normal, and doubtless a considerable enlargement of glands could take place within the limits of this shadow, but when the enlargement encroaches beyond the normal limit a definite shadow is visible. A single enlarged gland in the neck can be shown to throw a recognisable shadow,

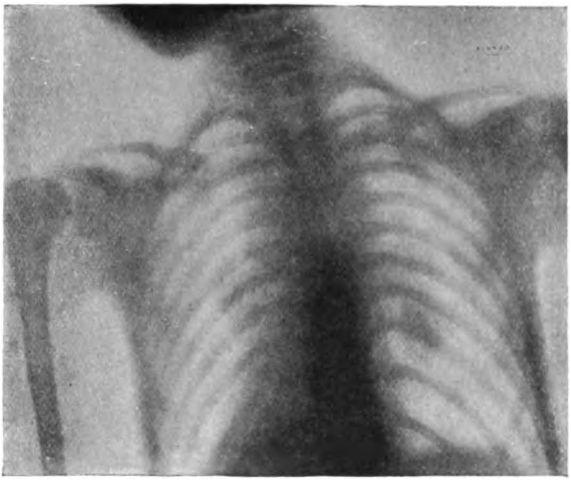

FIG. 6.

and we have already referred to the dense shadow thrown by caseation; it is, therefore, safe to assume that an enlarged and tuberculous gland in the mediastinum would cast a shadow of definite depth, especially if it be undergoing caseous changes. From their position in the middle plane of the thorax the shadow which they cast must of necessity be somewhat magnified, and this would have the effect of diminishing to some extent the depth of the shadow. And this in a case recently examined is precisely what was seen. The shadow extended considerably beyond the well-defined normal shadow, but it was somewhat hazy and indefinite (*see* Fig. 6).

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In all intra-thoracic abnormalities, whether they be recent or of long standing, it is of great importance to be able to watch the action of the diaphragm during quiet and forced respiration respectively. Some observers have affirmed that the earliest indications of tubercular mischief are given by a diminution of the diaphragmatic movements. Upon these points we have not as yet been able to come to any positive conclusion. The action of the diaphragm varies greatly in different individuals, and it is necessary to make a very large number of inspections before speaking definitely on the subject.

The conclusions which we would venture to draw from the experience of X-ray work that we have as yet had may be summed up in a few words :—

(1) The shadow cast by deposits of miliary tubercle can be detected at a very early stage, but probably not at the earliest.
(2) Such shadows can sometimes be recognised before the presence of tubercle is indicated by other physical signs.
(3) The limits and extent of advanced disease can be clearly defined, and the amount of caseation estimated.
(4) Purulent effusions into the pleural cavity and abscesses in any part of the chest can be discovered.
(5) The action of the heart can be watched.
(6) Thoracic tumours and aneurysms can be clearly seen, and their size and position determined.
(7) With improved apparatus there can be no doubt that the usefulness of the X rays will be vastly increased. In the foregoing paper we have only attempted to put forward a report of our work thus far, without for a moment desiring to claim for our observations any more than they deserve, as stepping stones to more advanced work in the future.

The PRESIDENT said he was sure he would be expressing the feelings of Fellows when he thanked Dr. Beale and Dr. Walsham for this extremely interesting summary of their work with the radioscope up to that time. He hoped they would favour the Society with the further results of their labours, and that others would be encouraged to work in a similar direction. The art of radiography was still in its infancy, and they might look forward to learning with its aid a great deal more concerning the condition of the chest and other internal structures.

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Dr. Lewis Jones said he would like to express the pleasure with which he had listened to the paper which had just been read by Dr. Clifford Beale, with its lucid exposition of the position of the subject. With regard to Dr. Hugh Walsham's work, he might say he had been acquainted with it and had watched it growing for a long time—from the very beginning—because a great deal of it had been done at St. Bartholomew's Hospital. He could testify to the great amount of pains which Dr. Walsham had devoted to the subject, and it had been very gratifying to him to see the art growing from very small and defective beginnings until now, when photographs of the chest were clearly of the utmost value. For his own part, if he were in doubt or uncertainty as to a case of early phthisis, he would prefer to see some good X-ray photographs of the chest rather than to have the opinion of any—however learned—auscultator. He was convinced that anyone who had had the opportunity of learning how to look at and study X-ray pictures would agree with him that the information conveyed by such a photograph in early phthisis was of the greatest value. As for himself, he considered that now, after having seen and studied Dr. Walsham's negatives and prints for some time, he could tell at sight, when a radiograph of the chest was shown him, whether the patient was or was not phthisical. The same power could be acquired by anybody with a little practice. Some of the Fellows, when looking at the photographs exhibited that night, without much previous knowledge of X-ray pictures of the chest, might be inclined to think there was a certain amount of haziness and blurring in many of them, and might find it difficult to be quite sure whether any chest exhibited was or was not tubercular, but after a little practice one learned to distinguish completely between extraneous and accidental markings and genuine tubercular markings in the X-ray photographs. He felt that all who made a special study of diseases of the chest would be compelled to adopt the X rays as a necessary part of the examination of their cases, particularly in doubtful or early phthisis, and whenever, in a case of commencing phthisis, one was anxious to know the condition of both lungs. No doubt by-and-bye the process would yield even sharper and clearer photographs, but those taken at the present time were quite good enough to be of the greatest value. By way of impressing his medical friends with the value of the new method he had often told them that they might throw away their stethoscopes and set up an X-ray apparatus instead for the examination of the chest. But he had found it difficult so to impress them that they accepted his suggestion and bought an apparatus and set to work with it. He felt that no person could afford to neglect X rays in the examination of the chest, and, if there were the time and taste for it, he advocated the medical man working the apparatus for himself. With regard to aneurysms, he believed Dr. Walsham could tell them already of a number of aneurysms which had been unsuspected or undiagnosed, but which he had been able to unmask by the X rays. In X-ray photography of the chest electricity had given one more good thing to diagnosis, and, being himself so much interested in medical electricity, he was very glad to see this branch of the work in such good hands as those of Dr. Walsham and Dr. Clifford Beale.

Dr. Sansom said he had been much interested in the paper and in the beautiful and practical demonstration employed to illustrate it; but he could not endorse the observation which had fallen from Dr. Lewis Jones, namely, that they were to throw their stethoscopes away and buy an X-ray apparatus. He would be one of the last to throw a particle of cold

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water on the attempt to discover by the X rays the singular processes of disease. He had used radiography in hospital a good deal, in doubtful cases, and had found it of great value. Still, the use of the stethoscope, with inspection, percussion, palpation, and the other physical methods of diagnosis must not, and could not, be dispensed with. The X-ray method must be regarded as a most useful supplement to the ordinary means. He recollected one case in which it was of the greatest practical diagnostic value. That was in a man in whom he could not demonstrate any aneurysmal bulging at all, nor any sign of pressure; but the radiogram showed a bulging which, in course of time, was confirmed. There was also evidence of bad arteries in various parts of the body. He believed radiography would go hand in hand with the older methods, but that it would never wholly supplant them.

Dr. J. KINGSTON FOWLER said that Dr. Mackenzie Davidson had recently examined for him two cases of tubercular disease of the lungs; in one there was no doubt as to the condition, and the other he had purposely refrained from examining before the skiagram was taken. In neither case could he get definite results. It appeared to him that the shadow of the first rib came at the exact spot where, in a case of early tuberculosis, one would like to have an absence of shadow. On stethoscopic examination of the second case he found clear evidence of disease at the apex of the lung, and examination of the expectoration proved this to be tubercular. He did not suppose that Dr. Lewis Jones really meant that they were to throw away their stethoscopes, but that they were to supplement the evidence thus obtained by the use of the X rays. They should use every method which science brought to their aid, none should be neglected. For example, the examination of sputum, in cases of disease of the chest, was regarded by some as a clinical luxury to be employed only in cases of pulmonary tuberculosis; but he thought it should be as much a matter of routine as the examination of the urine for the presence of albumen. Probably, in course of time, every well-instructed physician would have his X-ray apparatus and his laboratory, but no good would be done, at the outset, by making exaggerated claims for this new method.

Dr. CLIFFORD BEALE, in replying on the discussion, said he was very grateful for the kind remarks which had been uttered by the President and others. The demonstration was, of necessity, only a beginning—an attempt to show their own first steps. No doubt in course of time others would step considerably ahead, but everything must have a beginning. He cordially agreed with Dr. Lewis Jones in one of the remarks he made, though he could not do so in regard to the other. He fully confirmed what was said about the work of Dr. Hugh Walsham, though he had only been associated with him during the last eight months. They were colleagues at hospital, and had worked together, and Dr. Walsham had asked him to undertake the writing and reading of the paper, but it was clear to every Fellow that the real work had been done by Dr. Walsham, who had shown an amount of enthusiasm and pertinacity which was somewhat rare nowadays. The remark of Dr. Lewis Jones with which he did not agree had already been referred to by Dr. Kingston Fowler. However much one might believe in the value of skiascopy in detecting various morbid changes in the lungs, he did not feel inclined to give up the older methods. He regarded the X rays as a most valuable adjunct to the other means, but not as one which would supplant them, at any rate until the method was very much improved. Having now got to recognise a little more clearly than could be shown on a screen the

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morbid as against the normal shadows, he had the feeling that, however carefully the older method might be employed, the examination was not complete until X rays had been used. It was becoming a routine practice in his wards in a chest hospital, and if the apparatus were not so expensive he thought it would become part of the outfit of every physician's consulting room. He regretted they had not there that evening the beautiful instrument which Dr. Mackenzie Davidson showed before the Röntgen Society—the stereoscopic skiascope. By that method everything stood out perfectly clearly in the picture, giving the impression that the hand could be placed behind the viscus seen. In the Wheatstone stereoscope exhibited on the table somewhat similar effects could be got by those having equal vision in both eyes. He would like to demonstrate, in a patient who was waiting, the method of diagonal observation of the chest, as it was somewhat new—he had not seen it referred to in any English publication, though it had been described by two independent observers on the Continent, viz., at Nice and Vienna. He believed only certain cases admitted of it. By that means one was able to look down the whole length of the aorta, and if there happened to be any morbid projection on the aorta one was bound to see the shadow cast by it.

The demonstration followed.

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January 28th, 1901.

The PRESIDENT. Fellows of the Medical Society,—Since our last meeting an event has occurred which has cast a shadow over the whole world. But that shadow is faint compared to the grief and sorrow which have fallen upon every subject in the British Empire. I think you would hardly pardon me if I omitted to ask your consent for the Council and Fellows of the Society to forward to the proper quarter an expression of their sincere sympathy in the loss which His Majesty King Edward VII has sustained, and the profound grief which we, in common with every subject of Her late Majesty, feel at her decease. I beg, therefore, to move:—

"That a humble address be presented by the Council and Fellows of the Medical Society of London to His Majesty King Edward VII, expressing their deepest sympathy in the loss which he has sustained by the death of Her late Majesty Queen Victoria, and their profound admiration of the many virtues which Her Majesty displayed throughout her glorious reign."

The resolution was agreed to in silence.

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THE TREATMENT OF TYPHOID FEVER.

By FREDERICK J. SMITH, M.D. Oxon., F.R.C.P. Lond.

TYPHOID fever is a disease the ultimate etiology and pathology of which seem to be now pretty well worked out and understood, and the life-history of the bacillus typhosus, outside the human body, is rapidly becoming a common-place of medical science; but I venture to think there is still plenty of room for discussion upon the best clinical treatment of the disease. I have for many years held an opinion that the lines laid down for our guidance in the matter have been laid down too strictly on the assumption that the intestinal lesion is *the* point to which our therapeutical measures must be mainly directed. That the intestine, or mouth at least, is probably in all cases the portal of entrance of the bacillus, and that the intestinal lesions have very serious dangers of their own it would be idle for me to deny; but this paper is an offer to break an argumentative lance with those who hold that these dangers are entirely, or even in the main, due to departures from the routine milk treatment of our text-books of medicine. My statements are based upon my own experience of the disease, both in hospital and in private practice, and they are intended to have a practical value and bearing as well as to serve as a peg whereon to hang a discussion. I shall therefore consider the subject from the commencement of the illness, and will strike at once the keynote of my ideas and contention, which is to object to the customary orthodox proverb that runs thus:—"If the disease were only diagnosed early enough and appropriate treatment adopted many lives would be saved and much suffering avoided." The statement has a certain amount of truth in it, but it contains a great exaggeration and covertly throws on the profession as a body an undeserved amount of blame and obloquy, for the unspoken accusation is that any medical man ought to be able to diagnose typhoid fever at a glance, and having recognised it that he ought at once to treat it on routine lines. With the first of these propositions I have, of course, nothing to do, though its absurdity is known to us all; it is with the second that my whole paper will deal.

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An attack on the human frame by the bacillus typhosus goes through the usual stage of incubation followed by that of invasion, and most cases come under observation when the former is merging into the latter. The symptoms present are commonly headache of more or less severity, a general feeling of seediness and lassitude, a dirty tongue, and an upset of appetite and of bowel action, all probably coupled with some degree of pyrexia. Now such symptoms, and especially their ingravescent persistence, are in themselves absolutely pathognomonic of the necessary treatment, viz., bed. This is the only place where a patient presenting these symptoms ought to be, and provided we have insisted with sufficient authority on this one item of advice we have for the moment done all in our power to mitigate the severity of the attack which may be coming on. Whether the patient follows our advice and goes to bed or not, we usually consider that he will be the better for having the *primæ viæ* cleared out, and accordingly few of us resist the temptation to treat such a patient, probably with a blue pill, and certainly with a saline aperient. Now I hold very strongly that such a treatment cannot possibly have any ill effect if too violent a purgative, such as croton oil or elaterium, be avoided, even should the case ultimately prove to be one of typhoid fever. Again, if, on the one hand, the patient feels so ill that he follows our advice and goes to bed he will, as a matter of routine, be put upon bed diet, viz., milk or bread and milk, beef tea, soup, or cups of tea with bread and butter or dry toast; if, on the other hand, the symptoms be so mild that he neglects our advice and does not go to bed, his appetite will still be so poor that he is not likely to take food enough to incommode the intestines. In either case I cannot conceive that the food, either by quantity or quality, can be in a position to inflict any mechanical injury on the intestine, for it is inevitably reduced to a pulpy condition before it leaves the stomach, and the intestines are not yet in that dangerously ulcerated condition which they may later assume; hence, neither by drugs nor by food is the patient in this early and possibly doubtful stage likely to be harmed. If harm does really accrue from neglect in this stage it is, I believe, entirely, or at any rate mainly, due to the attempt of the patient to get about and do his work while the microbes are multiplying in him, and his organs, the heart especially, are being wasted by pyrexial oxidation and poisoned by foreign toxins of a most deleterious character. It is this which makes bed such an imperative point in treatment.

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I will now pass on to the cases where the diagnosis is certain and the disease is fully developed. I may incidentally mention that statistics will take no part in my argument. Statistics have their uses, but when we are considering the why and wherefore of a given patient's death our minds turn to the question—Could I have averted this catastrophe by any alteration in my plan of treatment? The patient, or his body, is before us as an individual case with its own secrets and interests, and not as a unit in a row of figures with some subtle paper relationship to percentages. I shall mention one or two cases that I have watched with the deepest interest. Now, in the treatment of such cases there are, in my opinion, two general principles of such overwhelming importance that I must deal with them first in general terms and later come to individual points: they are (1) the examination of the stools; and (2) the appetite of the patient.

Examination of the Stools.

I lay it down as a golden rule from which no exception should be made that one stool at least must be carefully examined in every 24 hours during the active course of the disease. In my hospital cases, where special facilities exist, I wash a stool through with running water in a large glass vessel. In private houses this is rarely practicable, but the stool even here should be carefully stirred about with something (that can be burnt), so that its composition may be investigated. In the stools may be found (1) obviously undigested milk or other food; (2) blood; (3) sloughs; and (4) mere feculent *débris*.

1. *The Presence of Undigested Milk or Other Food.*—This I take to be at once conclusive proof that more milk or other food is being given than can be digested, and is an absolute indication that the quantity must be considerably diminished. My own plan is to stop *all* food absolutely for 24 hours, and then begin with very small quantities indeed, and if it be milk curds that are found, I prohibit that article altogether in its natural raw state.

2. *Blood.*—If this be visible to the naked eye and yet is present only in small quantity it is an indication that the intestinal lesions are of considerable severity, and it serves more to cross the *t* and dot the *i* of caution than to give any special line to treatment; but if it be present in large quantity it gives the strongest indication for the free exhibition of opium, say 10 minims every two hours for

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eight or 10 doses, or until the patient is drowsy, and for the stopping of all food absolutely for 24 or 48 hours so as to give as complete rest as possible both to the mind and to the intestine.

3. *Sloughs.*—These by themselves and without blood in quantity merely indicate a natural state of affairs in a case of considerable severity about the third or fourth week. They make us anxious lest hæmorrhage should supervene and suggest starvation or caution in feeding for a day or two, and their total bulk is a matter of some importance as indicating the extent of the ulceration.

4. *Feculent Débris.*—This is the desirable constituent of the stools, and the more they consist of this and the less we are able to discern of the other named elements the stronger the indication to persist in the line of treatment which we have adopted.

The Appetite of the Patient.

I am sufficiently teleological in my opinions to hold very firmly that in the economy of nature appetite means the readiness of the stomach for food as well as capability of that organ for dealing with appropriate articles put into it. (I am not here dealing with the pathology of dyspepsia, which undoubtedly seems to offer many apparent exceptions to the above rule.) I have, therefore, in typhoid fever long made it a cardinal rule to allow the appetite of the patient to be, within very wide limits indeed, the sole arbiter of his diet, provided that vomiting, hæmorrhage, or distension of the abdomen are all absent. The temperature I entirely ignore in the matter, feeling absolutely certain that if the wish for the food exists the stomach is clean enough and strong enough to deal with the articles enumerated below, so that what gets into the intestines will do no mechanical damage to the walls of that viscus. While thus stating so emphatically my belief in a liberal dietary when appetite asks for it and other circumstances allow it, I must equally emphatically present the other extreme, viz., that in which appetite is completely in abeyance. I am quite confident that during the active ingravescent stage and the height of the fever the digestive function of the stomach is absolutely stopped, and probably that of the intestine too. Experience in the *post-mortem* room of full stomachs has convinced me very strongly of the truth of this dictum. I am sure that the only food that can during this time be dealt with, as it is the only food craved for by the patient, is

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plain cold water. We are very much afraid of thus starving our patients—too much so I am sure; for though we may lead a horse to water we cannot make him drink, and so we may pour food into the alimentary canal, but we cannot make it digest or absorb; nature starves the patient if we do not, witness the universal wasting in all severe cases of enteric fever; and the food we put in only travels slowly on, decomposing as it goes, and causing discomfort, if not threatening actual danger, and the idea of feeding the patient in the so-called typhoid stage—dry brown tongue, semi-delirium, &c.—on anything but water is to me repugnant in the extreme. It may naturally be asked how long would I keep on this water treatment. I cannot speak definitely as to limits, but I can say that I have kept it on for as long as four or five days with the happiest results, and have never regretted doing it for too long a period, though once or twice I have wished that I had persisted in it for a day or two more. The wish of the patient for food—in other words, his appetite—has hitherto been my sole reason for stopping it of my own will, though I have reluctantly yielded to the solicitations of friends who feared that the patient would die from exhaustion.

Diet.

Having now discussed the influence of appetite in general we may proceed to particular articles of diet in brief detail. Milk I must place first, because as a basis for diet it must remain my sheet-anchor. I strongly object to its being given in any bulk in its natural raw state. It forms a tough ball of curd in the stomach very likely to start vomiting. It should always be given in a form in which this balling and curdling are avoided—*e.g.*, as liquid custard (the yelk of five eggs beaten up with a pint of milk, sugar and flavouring added, and the whole thickened by scalding short of the boiling point); or as baked custard pudding broken up fine with a fork; or as junket; or as the basis of cocoa, of coffee, or tea, or of bread and milk; or with rusks soaked in it and beaten up with a little baked fruit pulp, according to the wish and appetite of the patient, or as milk puddings with ground rice, sago, tapioca, &c., well cooked. Eggs lightly boiled or poached I would allow in any stage, at least the yelk spread on bread or a rusk. Jelly and soups flavoured to taste are often very grateful to the palate. All the

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genus of commercial foods are, I think, of very doubtful nutritive value. The processes incidental to their manufacture on a commercial scale and to their preservation in bulk are what I suspect, and I much prefer beef tea made as follows :—Take half a pound of lean beef cut very small, better if passed through a sausage machine; place this in a small pie-dish, add half a pint of cold water, a pinch of salt, and a few drops of vinegar. Allow the whole to stand cold for two or three hours, then warm it slightly, and strain through muslin or even squeeze with a lemon squeezer. Or we may give the beef juice obtained by quickly cooking a steak over a very hot fire, splitting it open, and scraping it with a sharpish spoon so as to obtain tiny fragments of muscle with the juice. Meat and fish must be either put through a sausage machine or minced as fine as possible and pounded in a mortar. Bread (very stale, at least three days old), rusks, and plain biscuits of all sorts may be given, either soaked in milk or, if the patient prefers it, he may nibble at such to give his jaws a little exercise. The dryness of the article prevents it being swallowed before it is well softened by saliva. Beer or stout as a stimulating food I should never deny to a patient who asked for it, but other forms of alcohol, given purely as stimulants, come, I think, under the heading of drugs to be used for emergencies. In the typhoid state of a patient who is accustomed to beer and likes it, I believe in substituting bottled beer for water as the sole food to be given. The only articles to be avoided are those which may leave small hard particles after leaving the stomach, such as raw fruit, especially apples (their pips), orange-pips and pulp, and grapes (whole)—the juice I have no objection to.

These are examples of the usual available foods; we must now consider the quantities in which, and the times at which, they may be given. In the days when the disease is definitely present and yet the patient is quite conscious and willing to take food, I would give him, say at 8 a.m., a cup of milky tea, coffee, or cocoa, or of bread and milk, according to his predilection; at noon two tablespoonfuls of crushed meat or fish; at 4 p.m. 2 ounces of custard or custard pudding; at 8 p.m. the food of his breakfast could be repeated; and at midnight or 4 a.m. the bread and milk or any of the other items, if the patient is awake. The patient, however, should never be awakened for the purpose of administering food. Sleep is, I am sure, of more value to him than food in the stomach. Between the hours I have named nothing should be given but

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plain cold water, or hot water if the patient prefers it. This is an ample supply for any patient during the ingravescence and height of the disease, and during this time, even if there be some wish for more food, I think we should do better to hold our hands. If the patient becomes unconscious or semi-delirious and the tongue dries and becomes dirty, I think the quantity should be diminished and water substituted for two or three of the meals; but, *per contra*, as soon as the height of the disease has passed we should be ready to allow more latitude, according to the patient's feelings, provided that there be no indications to the contrary. These will appear either in the stools, the indications of which I have already mentioned, or in the shape of some complication of the disease, the treatment of which I will now proceed briefly to discuss.

Complications.

1. *Vomiting.*—This is a very exhausting act and is to be avoided in typhoid fever by all possible means. I believe it to be invariably due to putting food into a stomach which has no desire for alimentation, and hence it usually arises from routine feeding against the feelings of the patient. On the first indications of nausea after food resort should be at once had to the plain water diet for 12 hours, and longer if necessary; if it still persist I think a little hydrocyanic acid and bicarbonate of soda with solution of bismuth the best, as they are the usual and simplest remedies.

2. *Tympanites.*—This, whether as a natural result of perforation and peritonitis or as a complication by itself, I consider to be the complication of typhoid fever which is of most ominous significance and the most difficult to treat. In the former case there is, of course, little to be said or done; surgery, I believe, offers the one sole chance of recovery, and that but a poor one indeed. In the latter case—*i.e.*, standing by itself—there is a good deal to be said about it. As regards its causation, I believe that in some severe cases it will make its appearance despite our most careful attention, and then it requires to be treated as below. But I have a strong suspicion, however, that in the majority of cases it is a complication that arises from improper dieting. Hence I never feed a patient by routine, contrary to his feelings. When the fever gets higher and his feelings give us less guidance I think that a few grains of pepsin or other gastric digestive powder may be given with

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each meal, but I strongly disapprove of peptonising the food beforehand, as we cannot tell whether our processes are those which the stomach would like its food to undergo. Thus far prophylaxis in general; but we can carry this a stage further: at every visit the hand should be placed gently on the abdomen and careful palpation should be performed. It is thus possible to detect the very earliest warning of the onset of tympanites. The slightest tendency to rigidity of the abdominal muscles or the slightest convexity of the abdomen over its natural condition sounds at once a note of suspicion, and on the discovery of either we should immediately stop all food except water. My own plan is to administer at once 2 drachms of sulphate of soda in warm water every two hours till the bowels are acting freely. The complication, I believe, most commonly arises when there is constipation, but even if there be diarrhœa investigation will show that the stools have but little feculent *débris*, and I believe the saline aperient is still the best treatment. I usually, too, order an ice-bag to be placed on the abdomen and resort more persistently to chlorine water or salol as antiseptics. I cannot call to mind having a case of tympanites where the patient has been under my own care from the commencement.

3. *Constipation.*—This is a condition of the bowels which I never allow to persist, and the only question is what purgative to employ. All my patients are on admission, as a matter of routine, put upon 1 grain of calomel at least once a day, and sometimes twice. This has a slight antiseptic action and is a very safe laxative. If, however, in spite of this the bowels are not open at least once in every 12 hours my house physician has instructions to administer sulphate of soda in 2-drachm doses every two hours till the bowels act, a simple enema being also administered to attempt to clear the colon and to prevent a *vis in fronte*. I have seen several cases improve remarkably upon this line of treatment. I have never had cause to regret adopting it, but I have regretted a want of courage to adopt it in some of my earlier cases when I was feeling my way to such unorthodoxy.

4. *Excessive Diarrhœa.*—I have seen so little of this that I hardly feel competent to say much about it. From six to eight motions a day come quite within the natural history of most cases which ultimately recover. If the stools become more frequent than this they should be personally inspected with the greatest care and

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suspicion, and I believe that they will almost always supply the clue to the cause of the excess—either milk or food grossly and obviously undigested or much sloughy material from the bowel and large quantities of mucus. In the former case the line of treatment is obvious, viz., to stop all food but water; in the latter case my experience in the *post-mortem* room suggests that the cause is extensive ulceration of the colon, for this is what I have found in nearly all the cases upon which I have performed a necropsy—apart from perforation and peritonitis. I have therefore been led to regard excessive diarrhœa not due to feeding as a very fatal complication. I tried in one case, with a satisfactory result, an enema containing 2 drachms of tincture of opium, 1 ounce of subnitrate of bismuth, 2 drachms of powder of ipecacuanha, 1 ounce of starch, and hot water to 1 pint, so that I should be inclined to try a similar injection in future.

5. *Pyrexia.*—In ordinary cases this is best treated, I think, by tepid sponging. I confess that I do not like the idea of cold baths, but in one case at least where the temperature was very rebellious and threatening I distinctly believe that I saved the patient's life by continuous immersion for nearly three weeks in a bath maintained at 100° F. or a degree or so lower—at any rate, I considered her *in extremis;* I kept her in the bath, and she ultimately made a good recovery, and the impression of all who saw her was that it was the bath that saved her.

6. *Hæmorrhage.*—This I have already considered in speaking of the stools; I mention it again to emphasise my opinion that if starvation and opium are found to be useless I believe that nothing else is of the slightest use. Lead and tannic acid I am sure never reach the bleeding spot, and ergot is worse than useless unless it be administered in doses which I should be frightened to try.

Drugs.

No disease offers less chance to continuous routine drug treatment than does typhoid fever, and yet for all that I must admit that I have a preliminary routine treatment for all cases. It consists of 2 grains of calomel immediately and then 1 grain every night, and a mixture containing carbolic acid or chlorine water; or else I give 10 grains of salol in powder three times a day. I have a good deal of faith in these measures. The calomel acts slightly

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against any tendency to constipation and also as a mild antiseptic, and the other drug is probably useful from its antiseptic properties; such, at least, is my belief, though it is very difficult to account for their good effects upon scientific grounds, for they certainly do not render the stools completely aseptic. I can only assume that in some way the antiseptic derivatives of tar do antagonise some of the particular products of the bacillus typhosus which are most troublesome. Of other drugs I practically use none as a matter of course, reserving them for emergencies in the manner which I have mentioned under each heading.

I cannot leave the question of drugs without mentioning alcohol. This I believe to be unnecessary for the treatment of typhoid fever; but for the treatment of the patient I think that a little may be allowed to those who are in the habit of taking it, and, generally speaking, in that particular form to which they are accustomed. I am particularly fond of allowing a glass of beer, for to the lay mind a glass of beer has no associations with the dietary of the sick, and hence the permission to have one at once rouses them to the impression that they have a good chance of recovery, and this impression is a most valuable one to elicit and to keep up.

Of the details of nursing it is not my province to speak at length, but I would mention the importance of the medical man himself inspecting the buttocks, &c., to see that they are kept scrupulously clean. I am constantly in the habit of ordering a specially long flannel night-gown split all the way down the front and back and tied with tapes. This is the most comfortable form of clothing that I know of for all patients who are in bed and likely to be there for some time. It is at the same time the easiest for the nurse to manage so that free access can be gained to all parts of the body, and it is the easiest to replace and renew. It is such a contrast to the tight-fitting vest, sodden with sweat and probably with dirt, that I so frequently find clothing the person of patients in bed.

The mention of the treatment of typhoid fever would obviously be incomplete without reference to the method of anti-inoculation. This is, I believe, destined in the future to become the universal method (? for prophylaxis also). At present I am personally obliged to leave it with simple mention, but I am in hopes that in the discussion which may follow someone may take it up more fully—someone who has tried the method and has some results to show. The obvious analogy with diphtheria almost compels us to feel

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certain that it is only improvements in methods of technique that are required.

In conclusion, I would beg to repeat that the less of routine feeding there is in treating typhoid fever the better; each case must be taken on its own merits and indications. I cannot claim infallibility for my methods, but I believe that their results, as regards mortality, are at least as good as those of any other plan, and I feel sure that strength is better maintained and that convalescence is more endurable and rapid. Relapses do occur with my plan as with others, but I feel very little anxiety with regard to them, for the patient has as much strength as his primary attack can possibly allow him to have.

The PRESIDENT said he hoped the very suggestive paper, to which they had just listened, would be very fully discussed. He thought there were some very interesting points in it which would elicit a certain amount of criticism, but there were others which had much to recommend them. He had been a sufferer from the disease, and he wished he had heard Dr. Smith's paper before, instead of after, his attack; as there were several things which Dr. Smith said he would allow typhoid patients which he (Mr. Morgan) would have welcomed during his illness—for instance, a glass of beer.

Dr. SIDNEY PHILLIPS said the subject was so large that it was almost impossible to discuss it in detail. He agreed that cases of typhoid were not to be treated by any routine; and he was also with the author in a good deal that he said about the necessity for revising their notions as to diet in typhoid. He (Dr. Phillips) especially felt that, because he was the first in England to bring forward cases of typhoid without any ulceration of the intestine.* Two of these cases died of typhoid fever at a very late period of the disease, but there was no trace of ulceration in the intestine. That was before the bacillus had been identified with certainty. Since then the same thing had been repeatedly shown. Following that, he suggested that cases of typhoid might exist in which the abdominal dangers were of the slightest; and, in a paper, he said they should try to measure in some way the amount of intestinal ulceration or disturbance and regulate the treatment accordingly. Sir William Jenner insisted on marked tremor as an index of the intestinal disturbance and ulceration. In most cases the two did co-exist, but they could find cases with marked tremor that died without there being any ulceration. The tremor might be due to toxic influences. It had been conclusively shown that typhoid might fall on the lungs, on the kidneys, and on the cerebro-spinal system, and types of the disease had been named after those regions. He was, therefore, inclined to agree with Dr. Smith in saying that in many cases a great deal might be done by feeding the patient rather than by keeping food back. But Dr. Smith did not lay down rules quite as definitely as he would have liked. He could not distinguish whether Dr. Smith's treatment was to starve the patient for a week, or to cram him with whatever he might ask for, because his statements varied in different

* 'Trans. Clin. Soc.,' vol. xxiv, 1891, p. 104.

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parts of the paper. Perhaps the diet mentioned might seem luxurious, but it consisted mostly of soft things, none of which, he thought, would produce much danger. With regard to beer, he knew a family in Herts who were brought up on beer; they did not have milk, and he never saw healthier children. But one would not argue from that that beer was a good dietary for children; it only showed the tolerance of the human frame for all sorts of dietary. Beer given occasionally was no doubt a good stimulant and tonic. Many of them could remember that when his present Majesty the King was recovering from his attack of typhoid fever the first thing that he asked for was beer; and Sir William Gull and Sir William Jenner, after a consultation, allowed it. He agreed that many typhoid patients were much better without food for a time; but he would not be prepared to go as far as Dr. Smith in that respect. In a pamphlet sent over by a gentleman practising in the Transvaal, it was stated that typhoid patients were starved for seven days in many cases, and were not given even water, and yet they did very well. His own principle was to give the patient as much food as he could digest. If diarrhœa were present, or flocculent material were found in the stools, he would cut down the food. He did not see any reason for cutting down the milk from five to two pints, but would allow the patient six pints if he would take them. Dr. Smith said all cases of typhoid wasted very much, but he (Dr. Phillips) had had long-standing cases that had wasted but very little. The idea of giving the patients whatever their appetites demanded was first put forward by Dr. Barr, of Leeds, and he (Dr. Phillips) criticised it. He did not think they should be guided by the patient's appetite, if they did there would be more *post mortems*. He had seen typhoid patients eat chickens, bloaters, and other like things, but had seen others relapse after a Bath bun. He had seen a rabbit's leg in the intestine of a patient who died at University College Hospital. He strenuously protested against the patient's appetite being taken as a guide to treatment. Often nurses did not give the things which the doctor ordered, because they were bound by routine. As to the treatment of hæmorrhage, he agreed that purgatives were not good, and that opium was the great thing. He had seen good results from tincture of hamamelis, but opium was the sheet anchor and should be given freely. But there was danger even in that, for opium, if persisted in, paralysed the intestine, and tympanitis might supervene. As to tympanitis, he thought it often resulted from ill feeding, though what was taken for tympanitis was often a distension of the stomach, not of the intestines. Colonic distension was almost part of the typhoid, and often resulted from a reflex paralysis. Doughy tympanitis, as opposed to a tense abdomen, was seldom the result of errors in diet, and was, in his opinion a symptom of fatal augury. Purgatives given at the beginning of typhoid did not do much harm. He agreed with Dr. Smith that no cases did so badly as those which had been walking about for many days before taking to their bed.

Dr. Washington Isaac said he would be glad if Dr. Smith would give more information about the treatment of the attendant pyrexia. He (Dr. Isaac) had a case under his care with a temperature which ran up to 105° and 106°, and would not come down with tepid sponging.

Dr. Campbell Pope said he had recently had under his care a case of typhoid in which the temperature remained for nearly a fortnight from 104° to 106°. The patient did very well with tepid sponging twice daily, which kept the temperature from going beyond 106°. That made him attach less importance to temperature than he had previously, other

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symptoms being favourable. With regard to beer, he once had a remarkable patient who would have his beer all through his illness. The first day he got out of bed, after being there six weeks, he came downstairs, and the next day was given permission to take a short walk. The day following the patient told him he had walked to Willesden, three miles away, had a glass of beer, and walked back. With regard to hæmorrhage, he was glad to hear Dr. Phillips speak of tincture of hamamelis. That was very valuable. Another remedy which he thought might be extremely useful was suprarenal gland tissue. He had found it of value in nasal and internal hæmorrhage.

Dr. HUNTER expressed his thanks to Dr. Smith for his most interesting paper. He agreed with him as to the importance of the study of individual cases as against the study of statistics. At the same time, there were certain facts which could only be brought out by means of statistics, which represented the experience of the most notable students of the disease. An important feature about the disease was the extraordinary change which had occurred both in the frequency and severity of typhoid. When one tried to analyse this, it became apparent that the change was not so much due to any special treatment of the disease, as to the removal of other factors complicating it. Dr. Smith had mentioned —and the remark had been emphasised by Dr. Phillips—that it was not always a question of intestinal lesions, but one of pneumonia, of an affection of the kidney, or of the cerebro-spinal system. While he would certainly like to follow the line of treatment suggested by Dr. Smith, yet there was running through his paper the expression, "You can give so and so provided there is no contra-indication." His (Dr. Hunter's) experience of the disease was that it was precisely in cases where there was no such contra-indication that the most serious results followed. Perforation occurred without any indication, so did hæmorrhage. He would say, from his own pathological experience, that it was not possible to gauge, from the symptoms alone, the depth of the ulceration present; because this might be very slight throughout the whole of the intestine, but one ulcer might penetrate deeply. That was an occurrence which could not be foreseen nor combated in treatment. He had been much impressed during his pathological work with the fact that where ulceration had occurred it was at the seat of a complicated lesion; it was not simply due to the depth of the typhoid lesion, but to a superadded septic inflammation and ulceration. He was satisfied that the severe hæmorrhage met with was not essentially caused by the typhoid lesion *per se*. The septic inflammation of which he spoke was one which could be kept in check by the strictest antiseptic treatment of the alimentary tract from the lips downwards. The antiseptic which he had found most useful in these cases was perchloride of mercury, as it had a great advantage over any such artificial antiseptic as salol. He had a patient, not the subject of typhoid fever, who had been taking 30 minims of the perchloride for seven months, during which time his weight had increased nearly two stone. Regarding the general treatment of the disease, he thought Dr. Smith had emphasised very rightly the two points which were found most difficult, namely, the limitation of food—though he did not think he would be inclined to cater according to the patient's appetite—and complete disinfection throughout the intestine.

Dr. W. J. HADLEY said most of the speakers had devoted their remarks to the intestine; but it seemed to him that the deaths of patients, seen in the *post-mortem* room, were rarely due to the intestinal condition. The disease in question killed largely by toxæmia or hyperpyrexia, through

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the kidney or through the lungs, or from heart failure. Treatment should, therefore, be directed to these other conditions rather than to ulceration; and, for that reason, one would fear to carry out abstention from all food except water. Certainly one of the troubles they had was failure of the heart, which might be contributed to by pyrexia, toxæmia, or insufficient food. There might come a time when every ounce of energy would be wanted. Dr. Smith did not mention much about the treatment of pyrexia. One found that the failure in the pulse was almost measured by the amount of the fever. Perhaps the toxæmia, and, therefore, the heart failure were not all due to the typhoid affection of the intestine, but, perhaps in part, to the general condition of the patient. It would seem that prevention of constipation and the use of intestinal antiseptics were the best means of preventing the absorption of mixed toxins from the intestines. He was interested in what Dr. Hunter said about ulceration being often complex in these cases. One felt that it was not only the typhoid bacillus that had to be dealt with, but that, when the vital powers were at a low ebb, poisoning was produced by other germs also.

Dr. FRED. J. SMITH said his great regret was that he had to reply briefly, and that he had been compelled to listen to only brief criticisms. He would particularly like to know why Dr. Phillips said that the rabbit's leg caused the perforation in question; they might find a Bath bun in a man's peritoneal cavity, but that did not prove that it had caused the perforation. A Bath bun was not the best sort of thing to give, because it contained lemon peel, but dry stale bread was quite another thing, and could never cause perforation. He believed, with Dr. Hunter, that perforation was due to a distinct process of ulceration, and that it was possibly a mixed infection; at least it was totally independent of the food. They might have a long argument about peristalsis. They could not stop peristalsis; there must be something in the intestines to be carried on, and he did not think those movements had anything to do with perforation. He had known perforation occur in a patient three weeks after leaving the hospital. Perforation of the intestine was caused by ulceration, and though possibly there might be some food found in the peritoneal cavity, he did not think the food caused the perforation. With regard to pyrexia, he would advise Dr. Isaac to try a hot bath. His own plan was to use a bath of 100° F., and he could assure him that, however long the patient were kept in it, no harm would accrue. If that did not do, he would go in for purging. He saw by that week's journals that sulphate of sodium was found to be particularly poisonous to the bacillus typhosus, so much so that it was recommended to be put into the water issued to soldiers in order to free it from the germs. Regarding hamamelis, he thought it might be useful sometimes for checking hæmorrhage. The suprarenal gland was generally applied locally. He did not think it would be likely to do much good in hæmorrhage after absorption, because he thought it must increase the arterial tension. He agreed very much with Dr. Hunter as to statistics. But personally he did not think the statistics as to typhoid fever were worth the paper they were written on, as an argument for any special line of treatment. A practitioner in the country after stating that he had had about 80 cases of typhoid without a single death, subsequently lost five patients in one house, though the plan of treatment was exactly the same.

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February 25th, 1901.

PAINLESS CALCULOUS PYONEPHROSIS WITHOUT FEVER; NEPHRECTOMY; RECOVERY.

By ALBAN DORAN, F.R.C.S.

PAINLESS calculous pyonephrosis is by no means unknown. Still I find that we are too often induced, when making a diagnosis in a case of painless enlarged kidney, to exclude calculous pyonephrosis on the ground that that disease must always be more or less painful. For that reason I bring forward this case, also remarkable for the absence of any distinct history of fever, although there was much suppuration. I should like to hear the experience of others concerning absence of pain and fever in kidney disease of this type.

A woman, aged 38, was admitted into the Samaritan Hospital early this autumn under the care of Dr. Amand Routh, who diagnosed an enlargement of the right kidney of uncertain nature, and transferred her to me for surgical treatment. She had been married for 15 years, and had borne eight children; the youngest was 5½ years old. The patient informed me that she had been under treatment some months ago for disease of the womb, but had noticed a swelling in the right side for a year. Whenever she put on her corset she felt much nausea, and the swelling in the right side ached a little. After swallowing food epigastric pain and nausea followed, but when undressed she was always comfortable. She had never passed blood in the urine, and never suffered from symptoms of renal colic; nor could she remember any feverishness or rigors. She had been subject for three or four years to a cold numb feeling in the right arm and fingers; it lasted for several hours, and made the fingers look dead; the feeling ran down the right side, and both feet felt cold. For the last 12 months these attacks came on every day.

I could not get a complete clinical history of the case till some time after the operation, when her former attendant, Dr. Aurelius Maybury, of Portsmouth, kindly sent me some notes. He reported that some years ago he treated the patient's husband for double stricture, cystitis, and, he believed, greatly dilated ureter on the right side. Catheterism was still necessary, and pus always came away with the first drops. A few months before my patient entered the hospital Dr. Maybury treated her for copious muco-purulent discharge from the uterus, which was greatly enlarged. After appropriate treatment this morbid condition disappeared—in fact, I could detect no trace of pelvic disease.

The patient was fairly nourished, cheerful, and quite free from pain except when dressed. The abdominal walls were thin; a large movable kidney lay in the right flank, and could be pushed forwards to midway

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between the mammary and the middle line. Its surface was bilobulated; fluctuation was obscure. It was not tender.

For a week before operation the temperature never exceeded 98·4°. Menstruation was perfectly regular. The pulse was 84, small and regular. In eight days the urine ranged from 24 to 36 ounces in 24 hours, specific gravity 1019 to 1026, colour medium yellow and clear, except on one day when it was turbid, and on that occasion alone was there a trace of albumen.

I operated with the assistance of Mr. Butler-Smythe, and made a Langenbuch's incision on the right side, exposing the kidney. The liver and gall bladder were healthy. I passed my hand deeply into the abdomen till I could feel the left kidney, slightly enlarged, but of normal consistence and perfectly regular outline.

The right kidney, evidently cystic, was extracted with the greatest ease after division of the peritoneum external to the colon. The connective tissue and fat were absolutely healthy, and there were no adhesions to the kidney. But the ureter was a thin cord proceeding straight out of the cyst-like kidney, no pelvis being distinguishable. I secured the renal artery and vein and a large suprarenal (?) artery, and divided them. The ureter was dissected up for an inch, transfixed with a safety pin, tied, and divided. Thus the kidney was set free. The wound was closed without drainage; the stump of the ureter was fixed in its lower angle.

During the first week the patient had no rise of temperature, and the urine was of low specific gravity, and generally contained albumen. On the twelfth day the temperature rose to 100·4° in the mouth, and remained high for a fortnight, reaching 103·2° on the twenty-second day, the pulse remaining relatively low (84 to 100). The urine ranged from 29 to 40 ounces in 24 hours, its specific gravity from 1008 to 1015; there was generally a trace of albumen, and an excess of phosphates. After giving boric acid internally, the patient's condition greatly improved. At first, during the feverish attack, there was slight tenderness in the right loin, and the left kidney was a little swollen but not tender; there was also evidence of cystitis. The end of the ureter fixed in the wound was trimmed away, being sloughy; a small sinus 1½ inches long, but not discharging, lay in its track. There was no constitutional disturbance, sickness, or œdema during the feverishness, the precise nature of which was not certain. The patient did very well after the third week, and left in good condition, passing daily about 40 ounces of clear golden yellow urine of a low specific gravity (1005 to 1012). There was no swelling nor tenderness in either loin. Since her return home she has enjoyed good health.

Contents of the Kidney.—I will first consider the morbid appearances of the removed kidney. It measured over 6 inches vertically. I laid it open just after the operation, a quantity of greenish yellow pus escaped, of which half a pint was collected. Mr. Shattock reports it as "pure *pus laudabile*. It solidified on heating in a water-bath, and contained the normal number of fatty leucocytes. There was no trace of tubercle." A small rough calculus could be felt moving about in a loculus, which did not empty; a second was

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fixed in an adjacent loculus. The kidney was sent to the College of Surgeons.

Description of the Specimen.—I examined the specimen with Mr. Shattock in the museum of the College of Surgeons. The upper part was dilated into an almost unilocular cyst, through complete stricture of the ureter at its origin from the pelvis. Indeed, the ureter was reduced to a mere shred when I divided it at the operation, and cannot now be detected. On the renal side no trace of the orifice of the ureter could be distinguished. The lowest calyces were separate from the rest of the kidney, obstructed and dilated; one bulged between the two terminal divisions of the renal vessels, separating them to the extent of over 2 inches. The lowest were blocked by a small rough calculus at the infundibulum, and were dilated into a bilocular cyst holding about 3 drachms of pus. In another loculus, developed from a third dilated calyx, lay, perfectly loose, a fragment of a mulberry calculus, one-third of an inch in diameter. The connective tissue around the two branches of the renal vessels was much condensed by chronic inflammation. Yet there was no sign of inflammation in the fat and other tissues around the kidney. The kidney has been sewn up, so as to appear as it did at the operation, but it has shrunk considerably, so that its main cavity no longer predominates in size over the smaller dilated calyces.

The infection was probably gonococcal and therefore ascending. It was clear that the calculus in the lower calyces blocked them, hence their dilatation, distinct from the general distension of the kidney. The calculus blocked them so firmly that when the pus emptied out of the kidney as it was laid open the lower calyces remained full.

The cause of the blockage of the ureter at the pelvis and consequent dilatation of the kidney was not evident. The loose calculus may have formerly obstructed the ureter, and then come loose after the obstruction had been made complete by inflammation and contraction of that duct below the stone.

A similar case where the ureter was completely strictured, but stones were found loose, is preserved in the pathological series at the College Museum (No. 3,539A). The kidney was removed by Mr. Meredith from a woman, aged 33, and the disease was traced to an accident nearly five years before the operation. There was a clear history of attacks of pain, but, as in my own case, hæmaturia

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had never been observed. In the museum of St. Bartholomew's Hospital (Series xxviii, No. 2,375A*) is a right hydronephrotic kidney which I removed in 1891. In that case there were no calculi, but the ureter apparently became obstructed by adhesion to an aberrant renal artery. These three specimens show that the ureter may be obstructed very completely by adhesive inflammation in the hilum, quite independently of calculi, which may or may not be present. In other words, we are well aware that other agencies besides calculi may obstruct the ureter, whilst it seems possible (as in Mus. R.C.S., Path. Series, No. 3,539A) that an obstructing calculus may fall back into the dilated kidney. Hence, when we discover a loose calculus in a cystic kidney, we cannot always be certain that it was or was not the cause of the obstruction which led to the dilatation of that organ.

There are several clinical and surgical features in this case besides the absence of pain and fever, which seem to me to deserve a little consideration :—

1. It is fortunate that I operated at once, for the suppuration was still confined to the kidney, whilst the fat and connective tissue around remained perfectly healthy. Hence I was enabled to remove the kidney with the greatest ease ; there were no adhesions, and I enucleated it without tearing or bursting its wall and spilling pus into the peritoneum. Had the operation been deferred because the tumour seemed to be but a floating kidney, inflammation of the surrounding tissues would in all probability have developed at no distant date, greatly increasing the difficulty and danger of any future surgical procedure. I do not deny that the disease might have remained quiescent; the experience of Bruce Clarke, Murray (of Cape Town), and others, has shown how people manage to keep alive with very bad kidneys. In my case, it must be remembered, the kidney was movable, and thus much exposed to injury.

2. Acting on Mr. Knowsley Thornton's principles, I reached the diseased organ through a Langenbuch's incision, and was thus enabled to gain a fair idea of the state of the opposite kidney. I admit that there was danger, in this instance, of letting pus escape into the peritoneal cavity; but the abdominal incision

* "Hydronephrosis of Right Kidney Removed by Nephrectomy: Aberrant Renal Artery," 'Trans. Path. Soc.,' vol. xlii, p. 185.

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enabled me to enucleate the kidney with ease, keeping both aspects in sight during the whole process, and I could clearly distinguish the state of the hilum and ureter at a very early stage of the operation.

3. This clear view of the kidney and its relations afforded by Langenbuch's incision demonstrated that the diseased kidney could not possibly have exercised its functions for some time, and could hardly ever do so again. As Noble, of Philadelphia,* has observed, in reference to a case somewhat like my own: "Previous experience in somewhat similar cases had shown that when the system was relieved of the presence of one suppurating kidney, the other, even though not perfectly normal, did its work better." The ureter, atrophied below the pelvis, did not require Howard Kelly's very radical nepho-ureterectomy, which is not very difficult in a female subject, and is good and thorough surgery when the ureter is extensively diseased.†

The Absence of Pain.—It is chiefly because pain was entirely absent in this case, the main subjective symptoms being tenderness and nausea caused by the pressure of stays as in any movable kidney, that I publish this record. Most authors admit that painless pyonephrosis may occur exceptionally, but find that, as a rule, it is painful. In Morris's tables‡ all the eight cases§ of pyonephrosis are reported as "painful"; in one (No. 13) the kidney, as in my case, was movable. Here I may note that the clinical history affords explanation why the kidney disease was purulent; it was clearly not a case of a movable kidney becoming first hydronephrotic through obstruction of its ureter due to kinking, and then suppurating. The mobility had little or nothing to do with the disease.

To return to the question of pain, it is generally admitted that a calculus does not cause suffering when impacted; in my case there was both a loose and an impacted calculus. Mr. Bruce

* "Report of a Case of Nephrectomy for Pyonephrosis due to Impaction of a Stone in the Ureter, with Remarks on the Importance of the Early Diagnosis and Treatment of Renal Calculi," 'Amer. Journ. Obstet.,' vol. xli, 1900.

† 'Operative Gynæcology,' vol. i, p. 428.

‡ 'Hunterian Lectures on the Origin and Progress of Renal Surgery, with Special Reference to Stone in the Kidney and Ureter, &c.,' 1898, Table VI, "Hydronephrosis and Pyonephrosis."

§ *Ibid.*, Nos. 2, 3, 6, 8, 13, 14, 15, and 18.

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Clarke, who, perhaps more than any other authority, has brought forward evidence to prove how long extensive kidney disease may be borne, informs me in respect to the present case that he does not know whether he has observed a case of painless calculous pyonephrosis specially, but painless kidney containing calculus is common enough if the stone be fixed, and painless pyonephrosis without stone is almost the rule in his experience. Surgeons must never forget his remarkable researches in the *post-mortem* room at St. Bartholomew's Hospital from 1874 to 1884, "24 kidneys containing stones were discovered; 11 of these had well-marked symptoms during life and 13 had not."* He quotes Dr. Murray's case (Cape Town), where there was double calculous pyonephrosis.† I have looked up the original report, and find that the case was somewhat like mine, but was bilateral, whilst neither ureter was totally obstructed. As for pain, there was not even tenderness. The patient had been weak all through her life. Shortly before her death she suffered from attacks of faintness with fever and diarrhœa. A tumour was detected in the left loin, free from tenderness; it grew bigger, and pus was passed freely. Finally, the patient died delirious, after being three months under treatment. Murray's report of the necropsy is summed up in the sentence quoted by Bruce Clarke. The two kidneys "were simply bags of uriniferous pus, very little indeed of gland structure remaining."

Mr. Morris has recently informed me that only last month he operated within a week on two cases of renal calculus, the first intensely painful, the second painless. In the first, where pain was constant, he found a small stone packed away in a recess in an upper calyx. The second case bears striking points of resemblance to my own. The patient was a lady, aged 47, who had never suffered from any pain or local discomfort, beyond aching on the right side at night when she lay on the left side, and this symptom was attributed to rheumatism. For two months before operation she had passed bloody urine almost uninterruptedly. The right kidney was opened. It was riddled with calculi and pus sacculi. Nineteen calculi were removed; but the kidney was simply drained, and the case is doing well. In this instance there was painless

* 'The Diagnosis and Treatment of Diseases of the Kidney Amenable to Direct Surgical Interference,' 1886.

† "A Case of Long-standing Renal Calculi in both Kidneys," 'Lancet,' vol. ii. 1885, p. 614.

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calculous pyonephrosis with a distinct urinary symptom; in my case the same condition with no urinary symptom, as the ureter was blocked.

The Absence of Fever.—My patient declared that she had never experienced anything like feverishness or rigors. She had attended to her domestic duties without a day's rest for years—and as she had six living children, the eldest hardly 14 years old, those duties, I presume, were heavy. We know, however, that in chronic suppuration there may be little rise of temperature, and that even a temperature of 103° or 104° is not inconsistent with little loss of strength and a sensation of uneasiness soon forgotten. I dwell on this sympton—or absence of this symptom—because we are all apt to put down absence of fever or of any history of fever as evidence that, in any kidney case, suppuration is improbable. More often, however, as Morris and Bruce Clarke have already pointed out, we persist in thinking that stone in the kidney is always painful, though we ought to know better. Plenty of cases have been recorded where pain was absent. My own case shows that it may be absent, and that a patient may go about with one kidney converted into a bag of pus, yet appear in excellent health.

Addendum.—On April 2nd, 1901, the patient reported that she was in good health, and could attend to her work. She passed large quantities of urine daily, which Dr. A. Maybury found quite normal.

The PRESIDENT said Mr. Doran was to be congratulated on the case, which was almost unique, also on the successful result of the operation. He would like to ask Mr. Doran what influence, in his experience, the administration of boric acid had upon the urine, and whether in the present case that drug had any marked effect. Seeing the condition of the kidney after removal, the absence of pain and fever during life seemed to be very remarkable. The presence of stone in the kidney did not necessarily excite pain, but for stones, plus pus, not to cause pain must be very exceptional.

Mr. BUTLER SMYTHE said Mr. Doran was always very thorough and exhaustive in his accounts of the cases he brought forward, and this was the first occasion on which he had known that gentleman ask a question. The question was, why there should not be fever or pain when there was such an amount of pus and calculus present. He (Mr. Smythe) came to ask Mr. Doran the same question. He thought the question of pain often depended on the temperament of the patient; as that which some patients called aching, others would speak of as a very severe pain. He thought it might be possible for a round calculus to lie embedded in the kidney without producing pain, but if the calculus were angular, it was very unusual indeed not to get pain. With regard to the treatment of the ureter, he believed Mr. Doran said he left it in the lower part of the

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wound. That might be the right thing to do, but he did not see why, in these days of aseptic surgery, the ureter should not be cut, disinfected, and dropped back. He had done so in one or two instances, and no subsequent trouble had occurred.

Mr. ALBAN DORAN, in reply, said no doubt Mr. Knowsley Thornton had done a great deal towards generalising operations on the kidney. At the Samaritan Hospital they were more accustomed to operating through the abdomen, while other surgeons were perhaps more expert in operating through the loin. The anterior incision had to be used in some forms of kidney disease, even by operators who might prefer the lumbar incision in a general way. That being the case, what should be done with the ureter? It was true, as Mr. Butler Smythe remarked, that in these days of aseptic surgery the cut end of the ureter was often disinfected and allowed to drop back. But bad results, such as lumbar abscess, sometimes followed that practice. The foul urine which was passed after abdominal nephrectomy, even when the ureter was fixed externally, seemed to be clearly due to some sloughing process affecting the inner part of the ureter. He believed his own patient suffered in that way. He thought the condition would have been much worse if he had allowed the ureter to go back. The operator could never be certain that the ureter was not infected. Probably in his case it was infected by gonococci. He gave 10 grains of boric acid three times a day, and it immediately improved the foul urine. It appeared to act directly on the bladder, as did several other drugs. As the urine and the general health improved together he suspected that the trouble arose from the right ureter, which set up cystitis, and affected the remaining kidney. He had also found boric acid most useful after hysterectomy. In reply to the President, he said the right ureter was absolutely impervious at the point where he cut it off. With regard to the absence of pain and fever, Sir James Paget was in the habit of talking about "cold abscesses," but we must avoid the tendency to use a cunningly-devised expression or term sanctioned by a great authority to conceal what we did not know. He feared the expression "cold abscesses" did cover ignorance. Yet it might be applied to his own case. Those who had operated for pyosalpinx were aware that the gonococcus was an extremely tender organism, and that if it set up suppuration it died in its own pus. Mr. Shattock found that the pus in the present case appeared not to contain micro-organisms. Operation on a pyosalpinx might set up a feverish reaction. But often where a pyosalpinx had been opened and pus was spilt hardly any bad symptoms supervened. A pyosalpinx of this kind might be called a cold abscess, and for the same reasons the term might be applied to this suppurating kidney. But in chronic pyosalpinx there were sometimes bad results after operation, because the pus got reinfected, he believed, by the bacillus coli communis. In short, he quite believed in the existence of a pus which was clinically inert, and he quite believed also that if there had been adhesion to the intestines, and his case had gone on longer, there would have been fever through reinfection of the pus.

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ON FIBROIDS OF THE CERVIX UTERI.

By ARTHUR H. N. LEWERS, M.D. Lond., F.R.C.P. Lond.

AS is well known, fibroid tumours arising in the cervix are much less common than those occurring in the body of the uterus. The classification usually adopted for fibroid tumours of the uterine body may equally well be used for those originating in the cervix. Thus we have interstitial fibroids of the cervix, subperitoneal fibroids of the cervix, submucous fibroids of the cervix, and fibroid polypi of the cervix. A submucous fibroid of the cervix is one where the greater part of the tumour projects freely towards the cervical canal, one that is attached to the cervix by a constricted portion or neck. Very little of such a tumour remains embedded in the thickness of the cervical wall. I propose to say nothing further in the present paper about submucous fibroids or fibroid polypi of the cervix, since their treatment from below is well understood, and generally the same as when such tumours spring from the body of the uterus.

As regards interstitial and subperitoneal fibroids of the cervix the case is, however, different. Very little is said about them in most of the text-books on gynæcology, and they have not, I think, attracted as much attention elsewhere as their importance deserves. I may here refer to a short communication on "Myomata of the Neck of the Uterus," by Mr. Bland-Sutton, in the 'Transactions of the Obstetrical Society of London,' vol. xxxix, p. 160, in which two cases are well described. The importance of interstitial fibroids of the cervix is largely a matter of size. Thus a small interstitial fibroid of the cervix will probably cause no symptoms, and especially no menorrhagia; while an interstitial fibroid of the body of the uterus may cause profuse menorrhagia even when comparatively small. As regards subperitoneal fibroids when arising from the cervix, symptoms due to injurious pressure will arise with a tumour of comparatively moderate size, the size, for instance, of the fœtal head at or near term, while a subperitoneal fibroid of the same size arising from the body or fundus of the uterus may cause no symptoms at all. A subperitoneal fibroid of the size mentioned arising from the cervix is fixed, owing to the fact that it opens up

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the folds of the broad ligament and raises the peritoneum from the pelvic cavity. It also causes the rest of the uterus to be fixed; whereas a similar subperitoneal fibroid of the fundus or body of the uterus remains freely movable, unless peritoneal adhesions should be formed.

It appears to me that when either an interstitial or a subperitoneal fibroid of the cervix has reached the size of a cocoanut and upwards, the tumour should be removed. In either case, owing to the fixity of the tumour, pressure that can hardly fail to be injurious, especially to the ureters, is likely to occur in course of time. As a matter of fact, troubles connected with micturition figure prominently in the history of these cases.

As regards the effect produced on menstruation by interstitial fibroids of the cervix, sometimes there is profuse menorrhagia (as in Case 1 in this paper); sometimes, on the other hand, menstruation is scanty, or may even be absent for long intervals, as in Case 2. It may be suggested that whether in a particular case menstruation will be excessive or scanty depends very much on whether the convex aspect of the tumour towards the cervical canal is merely covered by the thinned cervical mucous membrane, or whether, on the other hand, the tumour in process of its growth upwards has invaded the lower part of the body of the uterus, and so caused hypertrophy of the mucous membrane there.

In two of the cases recorded in this paper (Cases 1 and 2) the cervical fibroid was solitary; no other fibroid was present in other parts of the uterus. In Case 1 there was menorrhagia sufficient to make the patient profoundly anæmic; while in Case 2 menstruation had always been scanty, and had, in fact, only occurred on three occasions in the two years before she came to see me. In Case 1 the cervical fibroid was an interstitial tumour of the anterior wall; in Case 2 it lay in the posterior wall. In Case 4 the cervical tumour was partly interstitial and partly subperitoneal; but there were also fibroids in the body of the uterus, as well as a left ovarian cyst, so that the part played by the cervical fibroid in producing the menorrhagia cannot be determined. In all my cases of large interstitial fibroid of the cervix the os uteri was found to be dilated at least sufficiently to admit the finger. In Case 3, one of large subperitoneal fibroid of the cervix, the os was not patulous.

An important point in diagnosis is to recognise the difference between a submucous fibroid of the cervix or body which is felt

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through the dilated os uteri, and a fibroid of the cervix that is truly interstitial. In the former case, of course, the tumour may be safely removed by *morcellement* through the vagina, whereas an attempt to remove a large interstitial fibroid of the cervix in that manner would almost certainly be disastrous. This will, I think, be clear on examination of the specimen in Case 1. If there is any difficulty in deciding as to what the exact position of the tumour is, it may be cleared up by careful examination under anæsthesia, when the finger can be passed sufficiently high into the uterus to recognise what proportion of the tumour is really projecting free towards the canal of the cervix.

As regards the changes likely to occur in cervical fibroids if not removed, I am able to refer to two cases. In one case, recorded in a paper of mine read before the Harveian Society in 1899, a large interstitial fibroid of the cervix sloughed, and was discharged through an opening spontaneously formed in the posterior lip of the cervix. The mass, which was horribly fœtid, weighed over 2 pounds, and left a correspondingly large cavity for absorption in the wall of the cervix and body of the uterus. The patient ultimately died worn out by septic fever. In another and more recent case, not among those here recorded, I removed a large interstitial fibroid of the posterior wall of the cervix, and on section found it to be undergoing mucoid change.

As regards the difficulties met with in removing these large cervical fibroids, the cases have all this in common, that the uterus and tumour are practically fixed, and therefore, no matter what may be the size of the abdominal incision, they cannot be drawn up out of the wound till the deep cervical attachments of the tumour have been more or less completely separated. In this respect these cases differ very much from large fibroids of the body of the uterus requiring hysterectomy. For there, apart from the presence of adhesions, when the incision is large enough, the uterus and tumours can be drawn out of the wound, when the attachments can be much more easily dealt with.

Another point is as to the treatment of the stump. In an ordinary abdominal hysterectomy for fibroids when the cervix is not involved, my custom is to dissect out a cone-shaped piece of the cervical mucous membrane, and then to pass sutures through the anterior and posterior walls of the stump, and tie them as tightly as possible. In cases, however, of interstitial fibroid of the cervix the wall of the

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cervix from which the tumour has been removed is very thin, and the opposite unaffected wall has also become very thin, owing to stretching as the tumour grew. In Cases 1 and 2 I tied these thin cervical walls together so as to shut off communication with the vagina, but no doubt a portion of the silk used must have appeared on the distal (vaginal) aspect. No trouble ensued in these cases from this method. An alternative is to merely pass ligatures through each cut edge of the stump independently where necessary to control bleeding, leaving the communication with the vagina widely open, and drawing the ends of the ligatures through the cervical canal into the vagina. A gauze drain may also be used passed through the cervix similarly into the vagina. I adopted this method in a recent case not recorded in this paper, and the result has been quite satisfactory. The following are the notes of the four cases on which this communication is based:—

CASE 1.—A. T., a single woman, aged 38, a housekeeper by occupation, was admitted under my care into the London Hospital on October 4th, 1899.

History.—She said that the periods had been excessive for the past three years and had been attended with pain. During this time the menstrual period had generally lasted for a fortnight or more, and the amount lost at each period has gradually increased. Menstruation began at the age of 11, and she was quite regular every four weeks, the periods lasting about three days, and the loss being less than the average, till three years ago. Till then her general health had been good, and she had suffered from no illness, except measles, which she had at the age of 21. Of late she has noticed that her feet have swelled. During the last two years she has had a great deal of worry. Her appetite has been fair, but the bowels as a rule have been constipated.

Present State.—On admission the patient was profoundly anæmic. There was a loud systolic *bruit* heard over the cardiac area, soft and blowing at the apex and harsh at the base. The *bruit* was also heard in the left axilla, and at the angle of the left scapula. The pulse was 114, soft and regular. The urine was normal.

On examining the abdomen old lineæ albicantes were seen on the lower abdomen. A hard fairly central swelling was felt rising out of the pelvis, and extending to within three fingerbreadths of the umbilicus. *Per vaginam* a hard mass was felt bulging down the anterior fornix, it was continuous with the swelling in the hypogastric region. The external os was very far back and difficult to reach; it admitted the finger easily, and a short way within the os the finger came on a hard convex body projecting from the anterior wall into the cavity of the cervix. The patient was so very anæmic that I decided to keep her at rest in bed taking iron and other tonics for some weeks before attempting any operation. By November 5th her colour had improved a good deal, and on that day she was examined under anæsthesia. I intended if the tumour had been found to be definitely submucous, that is to say, one where the bulk of the tumour lies free in the cavity of the uterus and

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only a small fraction lies in the thickness of the uterine wall, to have removed it by *morcellement* after further dilating the cervix. Under the anæsthetic, however, it was evident that the tumour was really interstitial, and about the size of a cocoanut. The uterus was practically fixed, so that the cervix could not be drawn down at all. Under these circumstances it seemed to me much more dangerous to try and deal with the tumour from below than to perform abdominal hysterectomy, so that on that occasion nothing more was done, and the patient was put back to bed. After the examination the patient bled a little every day up to November 8th. Her period began on November 12th, and continued till

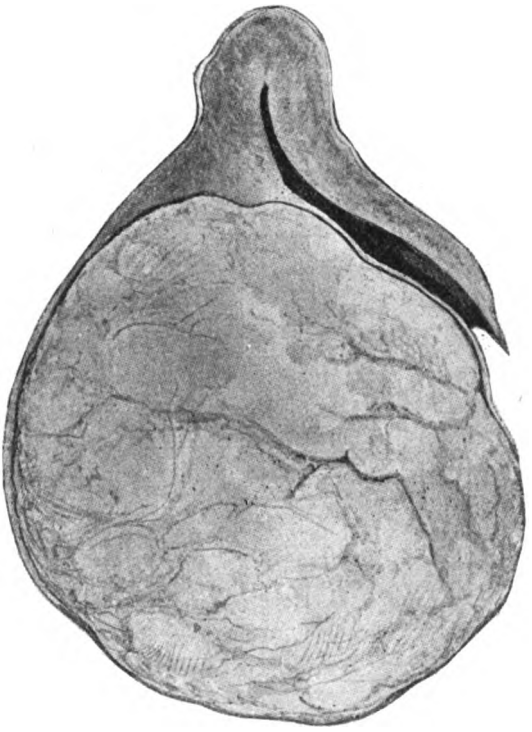

FIG. 1.—Case 1. Interstitial fibroid of the cervix—anterior wall.

the 20th; the loss was very considerable, and large clots were passed. She then felt very weak, and was again much more anæmic. On December 11th the patient had a severe flooding; the bleeding was checked by hypodermic injections of ergotin and hot vaginal douches; it continued however, though the loss was only slight, till December 18th. The position of matters was thoroughly explained to the patient, and she readily consented to abdominal hysterectomy.

Operation, December 28th, 1899.—The abdomen was opened by the usual incision in the middle line. It was then seen that the fundus and upper part of the body of the uterus were of about the normal size, and perched

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upon the top of the tumour, which was evidently situated chiefly in the cervix. The whole mass was firmly fixed, though there were no adhesions, so that at this stage it could not be pulled up at all. The upper part of the right broad ligament was divided between double ligatures, and the same thing was done on the left side, thus securing both sets of ovarian vessels. Still the tumour was quite immovable. Anterior and posterior peritoneal flaps were then made, and the bladder separated well down from the front of the mass. The abdominal incision was prolonged upwards for about 1 inch, and an assistant pressed the mass firmly upwards from the vagina. The right uterine artery was then found and tied, the left uterine being secured with Wells's forceps, and tied at a later stage. The mass was then pulled up as firmly as possible, and by a circular incision the body of the uterus and the cervical tumour were separated from the small portion of the cervix remaining below the position of the fibroid, and removed. The cervical canal was swabbed out with 1 in 20 carbolic acid, and the edges of the cervix were closely sutured together. Owing to the stretching of the cervix by the upward growth of the tumour the walls of the cervix were very thin, in places no thicker than about one-twelfth of an inch. Several oozing points in the neighbourhood of the stump required ligatures. The peritoneal flaps were then sewn together over the stump, and a Keith's tube having been inserted, the rest of the abdominal wound was closed in the usual way. The patient made an uneventful recovery, and left the hospital on January 27th, 1900.

Note on the Specimen.—The mass removed weighed 4 pounds 5 ounces. It was roughly the size and shape of a large cocoanut, except for a projecting knob at the top, which is the unaltered fundus and upper part of the body of the uterus. On sagittal section it is seen that the fibroid is truly interstitial in position, the thickness of uterine tissue being the same over the outer and inner aspects, and in both directions the lamella of uterine tissue is only very thin. The tumour lies for the most part in the anterior wall of the cervix, a small portion of the upper part of it may have encroached on the lower part of the body of the uterus. A small shaving was taken off the lower part of the tumour in removing it from the stump during the operation. This was taken away from the stump subsequently. Before making a sagittal section of the mass the opening into the cavity of the uterus admitted four fingers.

Case 2.—Mrs. M., aged 37, was sent to see me by Dr. Reeve, of Leytonstone, on March 26th, 1900. She had been married seven years, but had had no children. She had an incomplete miscarriage about two years ago, and I was called in to remove the part of the ovum that had been retained. On the present occasion she complained of soreness in the lower part of the back, going round to both iliac regions, which she had had for some time. About six months ago she had been unable to pass water for a whole day. For the past three or four months she had been troubled by a difficulty in holding the water. Menstruation appeared when she was between 13 and 14. She has never been regular, generally going more than a month between the periods. The loss has always been slight, and has been unattended with pain. She has only menstruated three times since the miscarriage. The last period occurred about ten days ago, and was very slight; before that she had "seen nothing" for six months. The bowels have latterly been much constipated.

On examining the abdomen a hard swelling was felt rising from the pelvis, and reaching nearly to the umbilicus; a portion of the tumour

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about the size of an egg was felt in the middle line and at the upper part of the general swelling, which could be moved somewhat on the underlying portion. (This subsequently proved to be the fundus and body of the uterus practically unaltered.) A loud uterine *souffle* was heard all over the tumour. The breasts showed no changes.

On vaginal examination the upper part of the vagina was found to be occupied by a smooth convex swelling. The external os, widely dilated, so as to form a crescentic slit with the convexity forwards, lay in front of the mass. The anterior lip of the cervix was thin, and exactly like its

FIG. 2.—Case 2. Interstitial fibroid of the cervix—posterior wall. The extremely thin anterior cervical wall is well seen. The body of the uterus practically unaltered.

condition during the first stage of labour. The mass was evidently an interstitial fibroid of the posterior wall of the cervix, which on the one hand had carried the body and fundus of the uterus unaltered in shape upwards to the neighbourhood of the umbilicus, and on the other hand had burrowed downwards into the posterior lip of the cervix, so as to completely obliterate it. The mass had little or no mobility.

The patient went into Fitzroy House shortly afterwards, and on April 7th, 1900, I performed abdominal hysterectomy. The same difficulty was met with as in the preceding case—the tumour could not be brought out of the wound, even after the upper part of the broad ligaments and the

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round ligaments had been divided, and the anterior and posterior peritoneal flaps had been dissected down. A somewhat circular incision was made rather low down into the tumour; anteriorly this divided the anterior wall of the cervix, which was extremely thin, and was spread out tightly over the tumour lying behind it. The circular incision posteriorly opened a thin capsule of cervical tissue, out of which the lowest portion of the tumour was with some difficulty enucleated. The most noticeable points about the case here were the extreme thinness of the walls of the cervix constituting the stump, and the wide communication with the vagina. The question occurred to me whether to leave this open for drainage, or to close it. I decided to close it, and therefore sutured the anterior and posterior walls of the cervix together, endeavouring to let as little as possible of the suture (silk) appear on the vaginal aspect. The peritoneal flaps were then sutured over the stump, and a Keith's tube having been inserted the rest of the abdominal wound was closed in the usual way. The patient made an uninterrupted recovery. I saw her about five months afterwards. She was quite well. On examination what remained of the vaginal portion of the cervix was freely movable, and in what represented the external os some silk was seen. This was not loose, and as it was giving no trouble I made no attempt to remove it.

Note on the Specimen.—The specimen consists of the body of the uterus and the upper part of the cervix with the right uterine appendages. The posterior wall of the cervix is occupied by a large interstitial fibroid; the lowest convex portion of the tumour is what represented the posterior lip of the cervix on vaginal examination. The tumour measures 7 inches vertically, 5 inches transversely, and 3 inches from before back. The fundus and anterior wall of the uterus are not at all involved by the tumour. The anterior wall of the cervix has been stretched and thinned so as to constitute a layer only about one-tenth of an inch in thickness. The tumour extends upwards so as to involve the posterior wall of the body of the uterus to within a quarter of an inch of the fundus.

Case 3.—A. M., a single woman, aged 49, a housekeeper, was admitted under my care into the London Hospital on January 25th, 1900. She was sent to me by Dr. Birch, of Dalston, and Dr. Marston, of Clapton. She gave the following history:—

She was fairly well till May, 1898, then she had difficulty and pain in passing water, which lasted for about four months; at that time she noticed the abdomen was rather swollen. The greatest difficulty on micturition occurred after the menstrual periods. Menstruation began at the age of 13, and she has been regular every three weeks since, the period lasting about seven days. The amount lost has never been excessive. She has always had pain for a few days before the flow, relieved by it. For the last year and eight months the catamenia have been less and less. She has thought the swelling in the abdomen became greater at the menstrual period, and that recently it has not diminished in size afterwards as it used to do. She first noticed the swelling in the abdomen a year and eight months ago. At that time she began to be troubled with frequent desire to pass water, and often inability to do so for many hours. At such times she said the abdomen swelled considerably, and that her feet and legs also swelled. She has never had a catheter passed. She has not lost flesh.

Abdominal Examination, January 29th.—The abdomen is irregularly prominent from the lower part of the epigastric region to the pubes. An

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irregular hard tumour is felt rising from the pelvis and reaching to a handsbreath above the umbilicus. Laterally the tumour reaches outwards and a little beyond the anterior superior iliac spine on each side. The tumour has a slight range of mobility, both up and down, and from side to side. A loud uterine *souffle* is heard over the centre and left side of the tumour.

On vaginal examination a hard lump is felt bulging down the posterior fornix and the left lateral fornix. This lump is continuous with the tumour felt in the abdomen. A projecting part of the tumour, thought to be the body of the uterus, is felt anteriorly, but it could not be separated from the rest of the tumour. The lump in the posterior fornix is fixed.

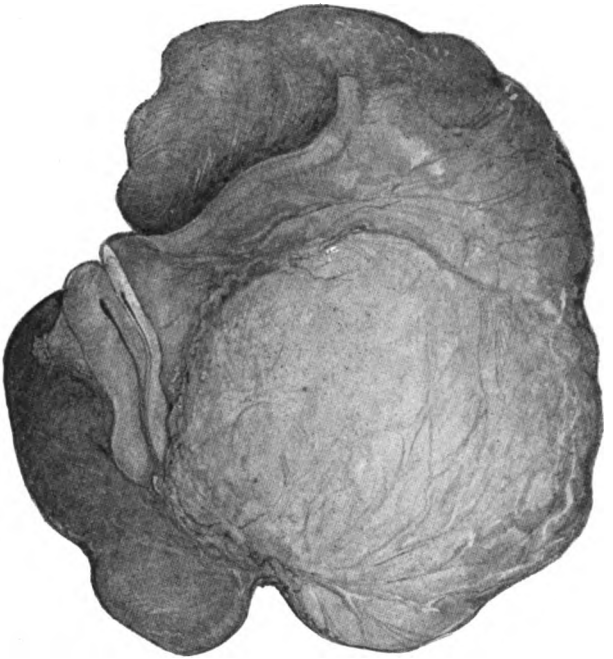

FIG. 3.—Case 3. Large subperitoneal fibroid springing from the posterior aspect of the cervix. Body of uterus little altered.

The vaginal portion of the cervix is not involved; a small mucous polypus projects from the os uteri. The sound passes 4½ inches. It could only be passed after fixing the cervix with a volsella.

Operation, February 9th, 1900.—The abdomen was opened by an incision from a point 2 inches above the umbilicus to within 1½ inches of the pubes. It was subsequently necessary to extend the incision upwards. When the peritoneal cavity was opened it was found that as regards the greater part of the incision—that from the level of the umbilicus downwards—there was no peritoneal cavity to the left of the incision, the peritoneum was reflected from the surface of the tumour to the abdominal wall on the left side about 1 inch from the incision. The sigmoid flexure lay to the right

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of and partly above the umbilicus. The body of the uterus was easily seen about the centre of the anterior aspect of the tumour. The uterus lay somewhat obliquely, so that its anterior surface looked to the right. The upper part of the right broad ligament was secured and divided, so that the right ovary was not removed. The left ovary was removed with the tumour. There was no pouch of Douglas nor any peritoneal cavity in the left of the pelvis; there was a small pouch of peritoneum in the right side of the pelvis. The tumour had grown from somewhere about the back of the cervix, and had raised the peritoneum entirely from the pouch of Douglas and the left side of the pelvis, also from the greater part of the left iliac fossa.

All the usual relations were therefore entirely altered. The tumour was removed by first incising the peritoneum over it, and then carefully enucleating it from the extensive retro-peritoneal bed indicated above. Large vessels going to the tumour were tied as they came into view; ultimately the region of the cervix was reached. The lower part of the cervix was not involved by the growth, and accordingly it was possible to make a cervical stump in the usual way. The incision made into the peritoneum in order to enucleate the tumour was then stitched together, a Keith's tube was inserted, and the abdominal incision closed in the usual way.

The tumour consisted of two main masses with secondary outgrowths: (1) The larger lay entirely under the peritoneum of the left broad ligament, the left side of the pelvis, and part of that in the left iliac fossa. (2) The smaller part lay under the peritoneum that should have formed Douglas's pouch. The body of the uterus, comparatively little altered, is seen about the middle of the specimen. The whole mass weighed 9½ pounds.

After-Progress.—In spite of the severity of the operation, which I think was the most difficult one of the kind that has occurred in my practice, the patient did very well. The stitches were removed on the tenth day, when the wound was looking well. It was strapped as usual, but unfortunately burst open as to its upper 3 inches, the part above the umbilicus, the next day. It was resutured, and no bad symptoms ensued. The rest of the convalescence was uninterrupted, and she went home on March 17th. I have heard of her recently, and she remains quite well.

Case 4.—Miss S., a single woman, aged 32, a bookkeeper at an hotel, came to see me on June 14th, 1900.

She said that she had noticed a lump in her abdomen for 16 months, and that lately it had greatly increased in size. For some years she has lost a great deal at the menstrual periods; the last two periods have not been quite so profuse as usual. At Easter she had a very excessive loss, the period lasted 10 days, and large clots were passed. She has not had much pain at the periods. There has been no trouble with micturition, and the bowels have been regular. She has not felt strong for some time, and has suffered from neuralgic headaches.

On examining the abdomen, a hard, irregular tumour was felt, reaching to the umbilicus. A softer portion of the tumour to the left suggested that there might be a small ovarian tumour as well. On vaginal examination the os uteri was found to be displaced forwards and dilated sufficiently to admit the finger. A hard tumour was felt within the os, projecting towards the cervical canal. The sound passed 5½ inches. The diagnosis was a more or less interstitial fibroid of the cervix, with

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multiple fibroids, and possibly a small ovarian cyst on the left side. The patient was very anæmic. She was admitted into the London Hospital shortly afterwards.

Operation, June 28th, 1900.—An abdominal panhysterectomy was performed. The ligatures on the uterine vessels were left long, and together with those on the cut edges of the vaginal walls were drawn down into the vagina. A strip of iodoform gauze was also drawn from above into the vagina; about 1 inch of it was left projecting into the peritoneal cavity. The rest of the wound was then closed in the usual manner. The patient made a good recovery.

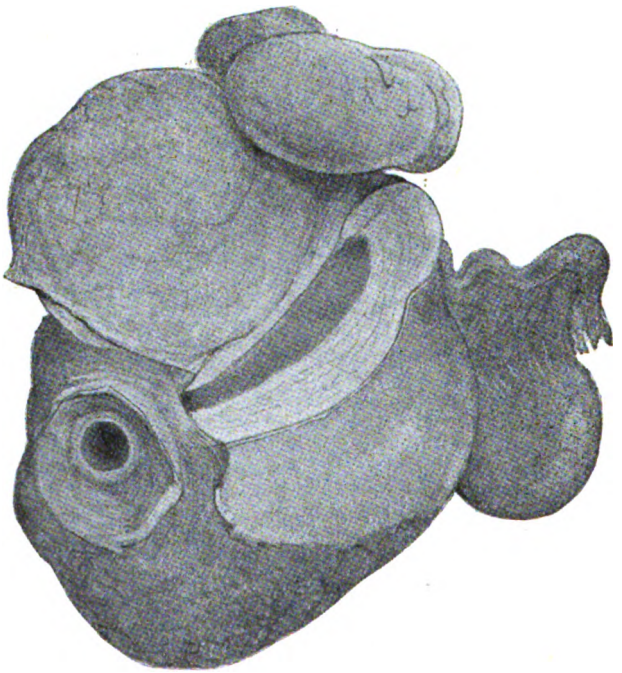

FIG. 4.—Case 4. Fibroid of cervix partly interstitial—projecting into cervical canal—partly and chiefly subperitoneal. Panhysterectomy. Other fibroids of uterine body. Small (left) ovarian cyst.

Note on the Specimen.—The specimen consists of the whole uterus with the left ovary and Fallopian tube. There is a portion of the vaginal mucous membrane behind the cervix. There is an interstitial and partly subperitoneal fibroid of the posterior wall of the uterus rather to the left side. It measures 6 inches long, 4½ broad, and 4 inches thick. It is largely cervical in position, reaching down almost to the external os, which is about the diameter of a shilling. There are several subperitoneal fibroids, chiefly to the right and behind, the largest about the size of the fœtal head at seven months. The left ovary forms a unilocular cyst of about the same size.

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Mr. Alban Doran said it was questionable whether in these days all the fibroids which were removed had been justly sacrificed; but there was a rule about them surgically, that the very worst and therefore the most dangerous to operate on were at the same time those in which it was right to operate, and Dr. Lewers had operated on that principle. He was very glad to hear that Dr. Lewers did not favour any "fancy" operation. It was well to remember in these cases Hancock's principle about operations on the foot:—"When the foot is partly crushed leave as much as possible, and do not be particular about performing a 'Syme' or some other recognised operation." On the whole, he thought retro-peritoneal hysterectomy was the best. No doubt pan-hysterectomy was very showy; but at the Moscow Congress, as Professor Strauch had informed him, it was found that pan-hysterectomy was dangerous and almost impossible to do safely when the cervix was involved, or in cases of very large fibroids of the broad ligament with the uterus sliding about upon them. In doing a pan-hysterectomy, it was occasionally impossible to avoid dividing the ureter when cutting down into the posterior fornix. The right thing to do when operating on the sub-peritoneal principle was to keep well inside the uterine structures; as long as there was something like a shell of uterus or cervix and the operator kept close to it, the ureter could not very well be damaged. Mr. Butler-Smythe would remember a case in which he assisted him (Mr. Doran), where it was impossible to tell the relations of the fibroid. They kept close to where they saw the uterine arteries until they managed to shell everything out completely down to the os externum. The disadvantage of retro-peritoneal hysterectomy was that a somewhat thick stump was left behind. He believed that in retro-peritoneal hysterectomy the surgeon could see what he was about all the time, instead of going by rules. Dr. Lewers was quite right in stating that when a fibroid of the cervix reached the size of a cocoanut it ought to be removed. The only point of doubt he felt in regard to the cases narrated by Dr. Lewers was in the third case. He thought it might have been a fibroid of the broad ligament pushing down below and pressing against the uterus and stretching and absorbing the supra-vaginal portion of the cervix till it became a mere cord. In some such cases of his own he had given the diagnosis of fibroid of the posterior lip of the cervix. It was remarkable how puzzling they were, even when they were dissected afterwards. On the whole, he thought the Fellows could congratulate Dr. Lewers on his good surgery.

Dr. Gow said it was so commonly taught that fibroids grew in the body of the uterus, that the existence of cervical fibroids was apt to be overlooked. Dr. Lewers had probably met with rather more than his fair share of cervical fibroids. His own impression was that they did not occur in more than 3 or 4 per cent. of the cases which required treatment by abdominal hysterectomy. Dr. Lewers's first three cases illustrated the three varieties of cervical fibroids—those growing from the anterior, posterior, and lateral walls respectively. It was curious to note that cervical fibroids seldom came under observation until they had attained a comparatively large size, and this was no doubt due to the fact that such tumours, in their earlier stages, caused no symptoms. Dr. Lewers had referred to the physical signs produced by these tumours, but had not commented upon them. A cervical fibroid often caused great expansion of one lip of the vaginal cervix and thus produced a large rounded mass which projected into the vagina and might, on careless examination, be taken for a polypus. The difficulty in

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removal by abdominal hysterectomy was greater in cases where the tumours grew from the body, but not so great as at first sight might appear. In the last case, in his own practice, where the fibroid grew from the posterior aspect of the supra-vaginal cervix, the following plan of removal was found convenient :—The ovarian arteries were tied, the broad ligaments divided, the anterior peritoneal flap turned down, the uterine arteries clamped, and the uterus and tumour drawn partly out through the abdominal wound ; the body of the uterus and as much of the tumour as could be drawn out were then cut away, and the remaining portion of the tumour was then easily enucleated from before backwards by stripping it off the posterior aspect of the cervix. The cervical canal, in all cases of interstitial fibroids, was found to be so enormously dilated as to easily admit two or three fingers, and the walls, both anterior and posterior, were greatly thinned. As to the best treatment of the stump formed by this dilated cervix, he was not prepared to speak positively. In the case referred to he had inverted the edges and united them by two sutures, and by this means prevented any drainage into the vagina. The case had recovered, but there was some temporary febrile disturbance which might have been avoided if the cervix had been left open so as to permit of the escape of the blood that probably oozed into the space left below the united peritoneal flaps. He did not approve of the plan of ligaturing the edges of the cervix and bringing the free end of the ligatures out into the vagina, as had been done in one case by Dr. Lewers. He agreed with Mr. Doran that in these cases abdominal hysterectomy, with sub-peritoneal treatment of the stump, was to be preferred to pan-hysterectomy.

Dr. Amand Routh congratulated Dr. Lewers on his excellent paper. He believed that in course of time gynæcologists would know more about these cervical fibroids, for he thought that they differed in many respects from similar growths of the body. As Dr. Gow had mentioned, they were almost always single, and were but very rarely associated with multi-nodular growths of the uterine body. The points which one emphasised in diagnosis were, firstly, menorrhagia, which was out of all proportion to the remote position of the fibroid ; secondly, the patent cervix ; and thirdly, the fact—to differentiate it especially from a broad ligament fibroid—when the sound was passed it could be felt bimanually to extend above and apparently jutting out from the main bulk of the fibroid. He need not criticise anything in the surgical part of the paper ; that had already been well done. In one case which he had—an instance, he believed, of cervical fibroid—instead of doing any operation of the sort described that evening, he tied the uterine artery per vaginam on that side. That was over two years ago, and the fibroid had definitely shrunk. It was in a woman of 35, and possibly some such procedure as that might be tried before resorting to an abdominal operation. One wondered, too, though he had not had any opportunity of testing it, whether it would not be possible to enucleate the fibroids at the cœliotomy and to leave the uterus in some cases. He thought that might have been done in Dr. Lewers's first case. The specimen seemed to prove that a very fair shell of the uterus could have been left between the bed of the fibroid and the cavity.

Mr. Malcolm thought that Dr. Lewers's last two cases differed from the first two. In the third and fourth cases the tumours were multiple, some of them affecting the body of the uterus, and he fully agreed with the method of treatment adopted. In the first two cases, however, the tumours seemed to have been single ; distending, in one case, the anterior

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lip, and in the other the posterior lip of the cervix uteri, although not in any sense pedunculate. He suggested that it would have been better, in each of these cases, to have enucleated the tumour through the vagina, and to have left the uterus intact. A tumour of the cervix is frequently single. It is then held down tightly by its connections, and, when enucleated, the capsule remains so fixed that firm packing of the sac may be effected with ease, and thus hæmorrhage may be arrested. About a year ago he had a case in which it had been necessary to decide the question whether to attack such a tumour from above or from below, and, although he usually preferred to remove pelvic tumours through the abdomen, he decided that it would be wiser to operate, in that case, through the vagina. The tumour occupied the greater part of the pelvis, distending the posterior lip of the cervix uteri, and having the body of the uterus perched upon the top of it. It was in no way pedunculate. Its relations were very like those of the first tumour handed round by Dr. Lewers, except that, in the latter, the anterior lip of the cervix was affected. Much blood was lost at the operation, but he thought that would also have been the case if he had operated by abdominal section. He tied the vessels he could see bleeding, and stuffed the wound with gauze. There was but little trouble after the patient recovered from the shock of the operation, and the non-removal of the uterus proved a decided advantage. He certainly advocated the treatment of single tumours of the cervix uteri by enucleation through the vagina.

Mr. Butler-Smythe said the four cases narrated were very difficult ones, and would have fared badly in the hands of a beginner. With regard to the disinfection of the cervical canal—from his own experience and that of his colleague—he did not consider the procedure essential. He thought there was no operation in abdominal surgery more difficult than the case of a fibroid tumour which could not be brought forward and upward towards the incision, and, in his opinion, such cases could never have been successfully treated by the older methods. Dr. Lewers's third case was, perhaps, the most difficult. In a similar case, Mr. Doran adopted Kelly's method of cutting right through the lower portion of the tumour rapidly, and then dealing with the uterine vessels wherever they could be found. This was good surgery, but it required coolness and dexterity on the part of both the operator and his assistant, because in the case of a large tumour the hæmorrhage was unusually severe, coming, as a rule, from both sides of the pelvis at the same moment. It was, however, easily controlled by the assistant grasping the cervix low down in the pelvis.

Dr. Lewers, in replying on the discussion, said one must adopt the operation suited to the particular case. Where part of the cervix was not affected by the tumour, and it was quite possible to form a good stump, he agreed with Mr. Doran and Dr. Gow that the operation should be supra-vaginal hysterectomy. But sometimes it was more convenient to do pan-hysterectomy, though it was difficult to say why. Those cases convalesced so satisfactorily that he had a slight prejudice in favour of doing pan-hysterectomy when, perhaps, other procedures would be equally successful. He agreed as to the danger of injuring the ureters in pan-hysterectomy, and only when the cervix was quite undilated was pan-hysterectomy safe. When the cervix was widely dilated it must come in close contact with the ureters, and, in some cases, it would be impossible to separate the ureter without wounding it. Mr. Doran seemed to think the third case might be a fibroid of the broad

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ligament. That was an extremely complicated case, and he would not like to dogmatise upon it. But the uterus seemed to be set firmly in the mass, and the attachment between the uterus and the tumour seemed to indicate the springing of the tumour from the uterus, rather than a mere apposition from pressure. He agreed that he seemed to have had more than his fair share of fibroids of the cervix, but all of them had been met with during the last 18 months. He thought the reason was that in the old days such cases would be looked upon as inoperable. If Dr. Gow would look at the fourth specimen he did not think he would retain his opinion that it was not a case of cervical fibroid. He (Dr. Lewers) took the view that the fibroid was partly in the cervix or arose in it, while Dr. Gow suggested it began in the body. But it largely projected into the cervical canal and a little way in the os uteri, so that in any case it was much the same to operate on as if it were cervical in origin. Dr. Gow criticised a method which he (Dr. Lewers) had carried out in a recent case, namely, tying the cut edges of the cervical stump which were inclined to bleed, leaving the opening quite widely patulous and drawing the ligatures down into the vagina. That was only five weeks ago. There were seven or eight long ligatures all attached to the upper edge of the dilated rim of the cervix. With a little traction he was able to get at the loops of them, probably because the cervix had shrunk, and he was able to take all out, except one. The case gave less trouble than he expected, and the patient had had no unfavourable symptoms. Dr. Routh's method of passing the sound, and so identifying the fundus in a particular position, was a useful manœuvre in making a diagnosis. He (Dr. Lewers) did not agree with tying the uterine arteries as a treatment for fibroids; he had a great objection to interfering in any way with the comparatively poor nutrition associated with any large fibroid. That was impressed upon him by a case some years ago, when one was more inclined to remove the appendages for fibroids. The patient was a bad subject for operation, and she had profuse menorrhagia, and he thought removal of the appendages would be a slighter operation than hysterectomy. He did so, and the patient died at the end of a week; they could not tell why, because the operation was simple. *Post mortem* a large interstitial fibroid in the fundus was found to have sloughed. His explanation was that in tying the ovarian arteries one had interfered with the nutrition of that portion of tumour which had sloughed, and so infection had occurred. Tying arteries would be very well if the tumour would shrink to the extent required. With regard to the question of enucleation from below, that was a matter which depended very much on the size of the tumour. In the cases in question the uterus was fixed, the cervix could not be drawn down, and such a condition of things was unfavourable for prolonged enucleation. In a case where there was as much of the fibroid towards the peritoneal aspect as towards the endometrium or cervical canal, with only a thin shell of tissue on each side between the operator and the peritoneum, if one cut along with scissors a hole was likely to be made in the peritoneum, which was a formidable accident, and might require immediate abdominal hysterectomy. He was interested in the statement that there was no need to disinfect the cervical canal, but he would prefer to continue doing it.

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March 4th, 18th, and April 1st, 1901.

THE LETTSOMIAN LECTURES: DISEASES AND DISORDERS OF THE HEART AND ARTERIES IN MIDDLE AND ADVANCED LIFE.

By J. MITCHELL BRUCE, M.A., LL.D., M.D., F.R.C.P.

LECTURE I.

MR. PRESIDENT AND GENTLEMEN,—My first duty this evening is to thank you, which I do most heartily and gratefully, for the honour you have done me by selecting me to deliver the Lettsomian Lectures for the present year. My second duty is to spend as little time as possible on preliminary remarks, for—as you, Sir, know, having yourself occupied this distinguished place on a former occasion—three hours are all too brief for useful presentation of material which one has collected for a purpose like the present. In selecting the subject of my Lectures I was mindful of the character and objects of this Society. In the Medical Society of London there is a fuller blending of men engaged in family practice with men holding hospital appointments than is the case at most of the other learned societies connected with our profession in London; and there is here an opportunity for free communication of experience and interchange of opinion between these two classes of our Fellows which cannot fail to be profitable to both. Therefore, I have taken up a subject of thoroughly practical interest; and not only this, but I will attempt to present it to you, to put you in a position to look at it, from the point of view of the practitioner. The problem of the diseases and disorders of the heart and arteries in middle and advanced life may be said to come before the family practitioner every hour of his work, and to offer difficulties and create a sense of responsibility or even anxiety which are not sufficiently appreciated by the hospital physician. There comes before him the case of one of his patients, an active business man of 45, who has been seized with angina pectoris when hurrying to the station after breakfast, or that of an old friend, whose proposal for an increase of his insurance at 50 has been declined because of arterial degeneration and polyuria; or he is asked to say whether a man of 60, occupying an important and possibly

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distinguished position in the community, ought to retire from public life because he has occasional attacks of præcordial oppression and a systolic murmur at the base of his heart. What, again, is he to do for the stout, free-living man, just passing the meridian of life, who consults him for weakness and depression, whose heart is large and feeble, and the urine saccharine and slightly albuminous? There is not one of my audience who has not met with such cases as these many times in his practice, and a variety of other cases of cardiac disorder and disease after 40, where the importance of the individuals, the value of their lives, and the gravity of their complaints and their prospects have exercised him very anxiously. What is the prognosis in cases of this order? What can be done for them in the way of treatment? These are the questions which we would desire to answer usefully. The answer, it seems to me, can be given only after an analysis and study of a considerable number of instances of the kind, in respect of their origin, their clinical characters and course, and the result. This is the method of inquiry which I propose to follow. It will be a study of cardio-vascular disease in older subjects from the clinical point of view, and it will be approached not only from the ordinary clinical side as it is approached in hospitals, that is, by an investigation of symptoms and signs, but also and especially in the light of that particular order of knowledge which the family practitioner has learned to appreciate and has so intimate an opportunity to acquire correctly —a knowledge of the origin or causes of the different affections, which it is always difficult, and often impossible, for the hospital physician to ascertain. For the same reason, although, to be complete, a study of the diseases of the circulation at and after middle life should include an account of the *post-mortem* characters found in fatal cases, and whilst the basis of the account I submit to you will be essentially pathological, I shall not attempt to describe the pathological anatomy and histology of this group of lesions of the heart and arteries. This part of the subject has been remarkably advanced during the last few years; and even if I had the time and the necessary knowledge to deal with it now, I should have nothing original in it to lay before you. Indeed, if I may venture to say so, our attention lately has been too much confined to the pathological states of the heart and arteries and too little directed to the causes which produce them. "Arterial sclerosis" is now an ordinary diagnosis in every-day practice, as if it were sufficient for

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purposes of prognosis and treatment to have determined that the radial artery is thicker and longer and more dense than normal, without regard to the actual nature of the pathological change, whether strain, or syphilitic, or gouty, or otherwise. And in the same way the phrase "dilatation of the heart" is now in everybody's mouth, irrespective of considerations of its origin. Not only has the profession suddenly woke up to the recognition of a form of enlargement of the heart which was fully described fifty years ago by physicians in our own country, but the public have made "dilated heart" a fashionable disease which calls for the advice of a specialist and an annual visit to a Continental spa. We ought to have advanced beyond this stage of cardiac pathology long before this time. Besides, of how much greater interest is it in our every-day work to study the causes or circumstances that lead up to disease than the simple state of disease itself! And there is in a study of this kind an opportunity afforded to the family practitioner of advancing Medicine—scientific, preventive and therapeutical—as surely as if he were a pathologist in the *post-mortem* room or laboratory.

Before, however, examining the influences and circumstances which disorder and damage the circulation in middle and advanced life, let us see what the normal or natural state of the heart and arteries is after 40. It has been ascertained that the different parts of the circulatory apparatus pass through certain definite phases of change in the different stages of that decline of existence and energy which leads to senility and ends in death. We have to thank Professor Beneke, of Marburg, for the results of a laborious investigation of this subject which are generally accepted and which I will attempt to summarise.*

We should all expect the cardio-vascular system to undergo important changes with increasing age; but few of us would be prepared to find that these changes are neither uniformly progressive nor indeed continuously progressive in the same direction. To make more easily intelligible the nature and as far as possible the origin of these anatomical alterations in the heart and arteries during the second half of life, I will first refer for a moment to the circulation from 20 to 45. During this period of life the blood-pressure is relatively high, reaching its maximum about 36; the aorta and other large arteries increase in diameter from the

* F. W. Beneke, 'Die Altersdisposition.'

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stress of the blood-pressure on their elastic walls, particularly between 35 and 45, and the heart increases in size year after year at a nearly uniform rate. We have in these facts anatomical evidence of the great functional vigour and activity of the circulation in manhood. At 45, which is practically the commencement of the period with which we are concerned, remarkable changes occur. Whilst the arteries continue to increase in circumference (somewhat more slowly than before), the blood-pressure falls and the heart begins—almost suddenly—to diminish in size; and these three features characterise the circulation for the next 20 years, that is, until the age of 65. How is this fall in the size of the heart to be accounted for? Partly by the widening of the arterial trunks and the consequent fall of pressure. But not by these only; for although the arteries had been widening even more rapidly between 20 and 45, the pressure was actually at its maximum then and the heart large, and we shall presently find other facts opposed to this view. The peripheral resistance in the systemic arteries must fall from some other cause or causes in middle age than the loss of elasticity of the arterial walls, and these causes are probably reduction of mechanical stress, due to comparative bodily relaxation, loss of vaso-motor tone in the splanchnic area, and the chronic diseases of which the subjects have died whose hearts and vessels are measured *post mortem*. During this phase of life also, the blood becomes more venous in quality and its hæmoglobin value is lowered.

At 65, other changes which occur in the heart and arteries are not less striking than those which I have just described. The decline of circulatory energy, and the effects of time itself on the protoplasm of the cells of the body, have so lowered the metabolic and functional energy of the tissues and organs and the activity of the blood-supply, that a considerable proportion of the capillary network becomes obsolete. The peripheral resistance is thus increased, and the blood-pressure rises; therefore the heart once more increases so much in size that at the end of the 10 years (age 75) it is found as large as it was at 45, and at the same time the hæmoglobin value of the blood again proves to be higher. During this period, also, the arteries continue to grow wider and thicker and longer—another proof that the size of the heart is not determined solely by their calibre. Regarded as a whole, the process of senescence of the cardio-vascular system presents to us a beautiful instance of

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anatomical readjustment and compensation—the counterpart, in a way, of the growth of the circulation in energy and activity during the period of full manhood. The arterial walls, which have been stretched in their diameter and in their length by exhaustion of their elasticity under the stress of cardiac systole, are strengthened afresh by the development of stays formed of fibroid and muscular tissues in the intima and media; and the heart responds to the altered mechanical condition ahead of it in the arteries, and to the increased peripheral resistance caused by the obsolescence of many capillaries, by growing afresh.

This account relates to the size of the arteries after 40; now let us inquire what is the condition of their structural elements. The changes described do not necessarily involve disease of the tissue elements, unless we were to call every senile change morbid. My friends Dr. Bosanquet and Dr. Mullings have given me an account of the state of the heart and aorta in the bodies of 25 men, aged 40 and upwards, examined in the *post-mortem* room of Charing Cross Hospital, who had died from accident or suicide. The average age was 53½ years, and the aorta presented some degree of atheroma in half the cases. When we consider how very slight a change in the arch of the aorta is habitually described as "atheroma," and that in a few of the cases the valves were diseased and the heart enlarged, we are justified in concluding that in the majority of persons of 53 the arteries are still sound. This result is in accord with that obtained by the late Professor Humphry, who devoted his attention so long and so successfully to the investigation of old age. He states that in the great majority of cases the arterial system appears to present a healthy condition in those who attain to great age.* Even among the majority of centenarians the evidences of arterial degeneration were not manifest.† And we know that we occasionally meet with people of 80 and upwards whose pulses are unexceptionable, beyond presenting a trace of thickening and enlargement.

For my present purpose, therefore, we may conclude that as age advances, the arteries naturally become wider, longer and thicker, and altogether larger than in early life; and that we must not speak of "vascular degeneration" in an evil sense as often as we find these conditions present. As for the heart, we know that it may remain structurally sound, and is more often regular than irregular,

* Humphry, 'Old Age,' 1889, p. 23.

† *Op. cit.*, p. 48.

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to the most advanced years of life. Conversely, these facts suggest that actual diseases of the arteries and heart, that is, other than the changes which are found in all persons after 45, are not properly senile in their nature. As Professor Humphry said, they are no part of, but are rather to be regarded as deviations from, or morbid departures from, the natural phenomena.* They must be the effects of pathological processes due to a variety of pathogenetic influences which assail the circulation. Now we are in a position to study these.

After the age of 40, many of the influences that threaten the heart and arteries with disorder and disease are peculiar to this period of life—that is, different and distinct from the causes of cardiac and vascular affections in childhood, adolescence and manhood; others of them have been encountered already, with or without permanent damage as the result. I will now examine them in detail, and at the same time refer to certain provisions with which the heart and arteries are endowed for resisting them and recovering naturally from their effects, as well as to the circumstances which render these provisions abortive or insufficient, and thus predispose to disease or indirectly determine its occurrence.

1. *Physical stress* is still a definite cause of cardiac and vascular damage during the second half of life, in the forms both of sudden violent exertion and of ordinary laborious occupations. I have met with instances of acute and serious strain at all ages over 40, up to and even after 70. I am aware that I must speak on this part of my subject—the evil effects of muscular exercise—with great caution in the presence of you, Sir, our President, who have long been recognised as one of the principal patrons in our profession of athletic sports, and so highly distinguished yourself in them at Oxford and in the inter-University contests. I assume that you are unwilling to admit that muscular exercise is dangerous to health. But I feel sure that you will agree with me that when the man of 65 rushes from his breakfast-table to catch his train, or the lady of 70 hurries up a hill in Wales to be in time for morning service, or the middle-aged father on holiday, who has just started a bicycle in order to reduce his weight, takes the pace from his son of 17, the effect on the heart and arteries is likely to be serious. I have notes of a good many cases of cardiac strain in middle-aged and old persons from cycling; a very few from violent efforts to drive at

* Humphry, 'Old Age,' 1889, p. 15.

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golf; a few from efforts at lifting or resisting heavy weights; and one notable case in which a member of our own profession, a man of 45, belonging to the Royal Army Medical Corps, broke down with acute cardiac dilatation during General French's memorable ride to relieve Kimberley. In some of my cases there was no reason to believe that the heart was other than sound before the strain; but in a majority of them (and I have analysed 40, of which I have more or less full notes) one or more of the safeguards of the circulation against strain were already defective or wanting. What are these? In the heart, chiefly a high degree of extensibility or elasticity of its tissues, permitting over-distension of the chambers, with safety-valve action of the tricuspid in extreme cases, and a sound and vigorous musculature to effect the increased action, and if necessary the hypertrophy, which mechanical stress demands—in a word, healthy, well-nourished cardiac walls. It is an interesting fact that two-thirds of my cases of cardiac strain in the second half of life presented also a history of gout, fully developed or irregular—in other words, a history of perverted metabolism. Equally striking is another fact in this connection: that in many cases the occurrence of strain in middle or advanced age was but the latest of a series of similar events as the result of muscular effort for a period of 10, 20, 30, 40, or even 50 years—in other words, the heart had been strained originally in youth or early manhood, and had given serious trouble as often as it was taxed again. Rowing or running at college was in a good many instances given as the cause of the first strain. I need not do more than mention previous valvular disease, usually of rheumatic origin, as a condition powerfully predisposing to cardiac injury by physical exertion. Excepting in this indirect way, rheumatism has no effect in lowering the resistance of heart or vessels to mechanical stress.

The principal safeguard which the arteries possess against strain is, of course, the extensibility and elasticity of their tissues. Unfortunately the metabolic disorders, including gout, which we have just found weakening the cardiac walls, are amongst the commonest causes of arterial degeneration also; and the two influences—gout and strain—acting together no doubt are accountable for a considerable number of cases of atheroma and chronic arteritis. It naturally might occur to us that gout and exertion could not well be associated, but this very consideration serves to explain their mutual influence in straining the heart. It is unwise, ill-timed, ill-planned muscular

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exercise that injures the circulation, most often on the part of the middle-aged man, who, awaking to the consciousness of growing fat and gouty, rushes inconsiderately to violent exercise for relief.

2. It is generally recognised that nervous excitement and other *nervous influences* tax the circulation; and endless phrases and expressions, articulate and inarticulate, testify to the universal belief in the close connection between the heart and the emotions. Quite recently Dr. Leonard Hill and Dr. George Oliver have demonstrated instrumentally the rise of blood-pressure that accompanies cerebral activity.* No doubt many cases of disorder and disease of the walls of the heart and arteries originate in distress, worry, anxiety and protracted suspense; and the connection is most often seen in middle and advanced life, because these depressing emotions fall most heavily upon mankind at this period. Of the instances which I have met with I will mention but one or two by way of illustration. A member of the Reform Committee at Johannesburg at the time of the Jameson Raid, who had been confined in Pretoria Jail, came home sometime afterwards with the ordinary symptoms and signs of fatty degeneration of the heart, and died suddenly on the street. A detective officer who had tracked suspects and criminals all over the world, facing great personal danger, and on one occasion had to convey a parcel of dynamite found near a Government office to a place of safety many miles away, came under my care later on with arterial sclerosis and cerebral thrombosis, for which no other cause but a life of adventure could be discovered. These were cases of actual disease of the heart and arterial system respectively; and I need not add that disturbances or disorders of the circulation, of every degree and variety, the result of nervous excitement or depression, come constantly under our observation, especially in women. I would particularly mention, however, a group of cardio-vascular troubles that lie between these two extremes. I have frequently observed that persons of anxious and energetic temperament, burthened with responsible work of a heavy, constant and prolonged character, when they break down, as they often do, present the clinical features of high tension: the pulse is full, the heart is large, the second aortic sound is loud and ringing; there is polyuria, and a trace of albumen may be found. This disturbance of the circulation, strongly suggestive of contracted kidney, is as common in women

* Leonard Hill, Allbutt's 'System of Medicine,' vol. xii; George Oliver, 'The Blood and Blood-Pressure,' p. 170, 1901.

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as in men—for instance, in matrons of schools or hospitals. Nevertheless, however clear the direct connection between nervous strain and cardio-vascular disease may be in many instances, it is in other instances unreal, or more correctly indirect only. This is a matter of great practical importance. First, the nervous temperament often drives the subjects of it to physical overwork in the form of incessant and prolonged devotion to work, with insufficient hours of rest and sleep, and to unwise attempts to remove nervous exhaustion by violent muscular exercise, as we have just seen. In the second place, alcohol undoubtedly plays an important part in many instances regarded as overwork and worry and nervous exhaustion, both in men and in women—alcohol taken to enable more work to be accomplished, to steady the nerves, to promote sleep, to drive away care, or to relieve the faintness which it has itself induced. And thirdly, many of the complaints of nervous depression, lowness and worry are really due to gout, to influenza, and the like, which are at the same time the true causes of the cardiac symptoms.

3. What I have just said in connection with nervous causes of cardio-vascular affections brings us naturally to that important group of agents which may be summarily called *extrinsic cardiac poisons*—alcohol, tobacco, tea, coffee and lead. I will not dwell on this subject at present, for there is no need to prove the reality of the connection, and I shall have occasion to refer to some of these poisons at greater length under the head of diagnosis. Alcoholic heart occurs both in men and women; tobacco heart is extraordinarily common in our own profession, and common in clergymen and in retired members of the public services; tea-, coffee-, and cocoa- poisoning I have met with principally in students.

4. There can be no question but that by far the most prolific causes of cardio-vascular disorder and disease after 40 are *disturbances of metabolism*, including gout—at any rate amongst the middle and upper classes in this country. This period of life brings with it in many instances comparative relaxation from work, and a disposition to substitute quiet or even passive for active exercise; and whilst the demands of growth and development on the alimentary system have greatly declined, the pleasures of the table and ease generally are too often indulged in as a privilege of advancing years and the legitimate reward of previous years of work. The results are functional disorders of the liver, gout in regular and

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irregular forms, gravel, and the many associated disorders of the muscular, nervous and other systems. At the same time the arterial tension rises, for the body possesses a physiological provision for eliminating the nitrogenous products of metabolism, whether normal or abnormal, namely, the kidneys, the vaso-motor mechanism and the heart. Stimulation of the vaso-motor centre by nitrogenous waste raises the arterial pressure; the heart is excited to more vigorous contraction (if necessary it hypertrophies); and the consequent polyuria washes the intrinsic poisons out of the system. Thus it happens that in metabolic disorders, from excessive or unwholesome eating and drinking, the heart, vessels and kidneys are kept under incessant strain; and, like other organs working under strain in the gouty subject, they are the readiest to suffer—first from disorders of many kinds, and ultimately, unless reform be enforced, from cardio-vascular degeneration and chronic Bright's disease.

Of the many cases of this kind that I have seen at all ages between 40 and 80 (and others before 40), the proportion of irregular gout to acute articular gout was about 3 to 2. Under irregular gout I include goutiness in its many forms—sick headache, eczema, sciatica, lumbago, acid dyspepsia, irritable bladder, asthma, insomnia, vertigo, depression, and the familiar complexion and appearance generally of "the gouty individual," all variously combined.

In other cases the metabolic disturbances come before us not as gout or even goutiness in the ordinary acceptation of the term, but in the forms of obesity, of diabetes, of gravel, of irregular albuminuria, and of the effects of large eating and free living in general.

5. *Syphilis*—that fruitful cause of vascular disease, and both directly and indirectly of cardiac disease—has by no means ceased to attack the organs of circulation after 40. Whatever the date of the primary infection, syphilis is a standing danger to the heart and arteries in the middle-aged man and even in declining years. Thus, in 11 cases belonging to this group, the average age at which they came under my observation (most of them but not all complaining of cardiac distress) was 55. All of these were men. I ought to add that in a considerable proportion of the cases either physical strain, alcohol, tobacco or Bright's disease was associated with syphilis in the etiology, and sometimes more than one of these.

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6. For the man and woman of forty years of age and upwards, most of *the acute specific fevers* are affairs of the past. But the liability to several of them remains, and, very unfortunately, the liability to those acute specific processes which may attack the cardio-vascular system—influenza in particular, and less often typhoid fever, rheumatism, diphtheria and pneumonia, as well as septicæmia of different forms or kinds, which works havoc throughout the entire circulation. I should have had more to say under this head but for the fact that our distinguished Fellow and former President, Dr. Sansom, has thoroughly investigated it, and on more than one occasion laid the results before you.

7. I will not occupy your time this evening in tracing the origin of certain cases of cardio-vascular disease in middle and advanced life to *chronic affections* of different kinds. Besides the obvious effects upon the heart, blood and blood-vessels, of anæmia, exhaustion, &c., we meet with such grave lesions as fatty degeneration from pernicious anæmia and other blood disorders; profound circulatory derangements and occasionally valvular lesions in Graves's disease, and others.

8. I now pass on to *complex causes*. In addition to the definite and distinct influences which I have mentioned as threatening the heart in this stage of life, there are two which are intimately associated with other causes of cardio-vascular disease, but still deserve to stand out independently. The first of these is emphysema, and along with it other chronic affections of the lungs and pleura, which strain the right ventricle; the second is chronic Bright's disease, which similarly strains the left ventricle. I shall have frequent occasion to return to these two morbid states in different parts of my subject. I mention them here to give them the position which they deserve as influences that threaten the function and still more the structure of the heart and arteries. They are often associated with each other, and each or both of them with one or more of the unfavourable influences I have just enumerated, particularly alcohol, disordered metabolism and gout. And this brings me to the many instances in which the different influences that threaten the circulatory organs in middle and advanced life act together in different combinations. Alcoholism is equally common amongst the poor, whose circulation is subjected to mechanical stress, whilst it is impoverished by want; the well-to-do, who lead luxurious, sedentary enervating lives; and, as I have

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already observed, the keen active business or professional man who overworks his brain on stimulants. In this country at least, gout appears to be all-pervading, and as an unfavourable influence on heart and vessels it often cannot be dissociated from alcohol, sedentary habits, worry, plumbism, Bright's disease and emphysema.

Thus, in our study of combinations of morbific influences we come to appreciate the evil effect of certain *occupations* upon the circulation in middle life. The business man is exposed to the unhealthy actions on his heart of confinement to a close office or shop, worry, irregular hasty feeding, alcoholic indulgence in connection with his trade or profession, and unwise attempts at violent muscular exercise at the week-end or in the holiday season; or he may be guilty of entire disregard of the rules of bodily and mental hygiene, and bring on in this way premature degeneration of his cardio-vascular system. Still more numerous are the causes at work in the production of "soldier's heart." We have but to picture to ourselves, if we can, the physical strain, the mental excitement, the bodily hardships—including exposure to both extremes of temperature—and the coarse fare which have been the lot of many thousands of our brave troops in the Boer war, to understand how the fighting soldier "ages" quickly, and, in particular, ages in his heart and arteries. Add to these unfavourable influences syphilis, alcohol and tobacco (which, unfortunately, must be added in many instances), and the chance of escape from disease of the circulation in the soldier is practically *nil*. But "soldier's heart" is also met with elsewhere than in the army. The clergyman from the slums of London or other great city, who has lived and toiled and—it may be said truly—has fought with various success through alternate periods of excitement and depression, and has thus suffered much both in mind and body, comes to us with high-tension pulse, a tortuous radial artery, a large heart and a systolic murmur over the aorta, and complains of an attack of angina. His wife, who has laboured in the parish for years (she is 76, and still active in her work of charity), has also a thickened radial artery, a large heart, and a systolic basic murmur, with no discoverable cause of these evidences of a diseased circulation but the life that she has led amongst the poor around her. Perhaps such cases of cardio-vascular disease might be most correctly said to be due to the wear and tear of life. They are met with also in the traveller or explorer, who has spent most of his life in search of adventure; and they are

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found in a man who has never left home, but whose years have been filled with the toil and anxiety of his position as an owner of land, or with prolonged litigation.

Such are the principal natural influences which individually or in different combinations threaten or assail the sound heart and blood vessels after the age of 40. I have given but a broad, hasty sketch of them entirely from my own recent observations, and I know that I have omitted some which in your opinion might deserve mention, but which possess no special interest in relation to this period of life—for example, the agents of acute infections of the endocardium, and also new growths, pregnancy and parturition. Let me now sum up the results, and say that whatever changes the cardio-vascular system may present in middle and advanced life, beyond those which we have found to be natural to it at those particular periods, are pathological—the result of physical stress, nervous influences, extrinsic poisons, disturbances of metabolism, syphilis, acute disease, or chronic disease; or are associated with chronic nephritis, emphysema or different combinations of the preceding causes, with various occupations or positions in life, or with other influences of less importance. It is necessary, however, to qualify this statement in two respects. In the first place, the heart and vessels may have been so damaged already, that is, in early life, that they fall victims to influences which, whether in kind or in degree, would have been insufficient to produce idiopathic disease of these organs. This brings me to the subject of old-standing valvular disease (mostly rheumatic in origin), chronic strain, and adherent pericardium in middle-aged and old subjects. A considerable proportion of our cases are of this type, and they have to be mentioned here for the sake of giving completeness to the plan of arrangement, but they are outside the range of our immediate subject. In the second place, hearts and arteries at 40 that appear to the naked eye free from damage may be molecularly weak, and unable to offer effective resistance even to influences of an every-day character. I have now arrived at the last, and certainly one of the most interesting, of the causes of disease of the heart and arteries in middle and advanced life. There are some persons whose hearts and arteries cannot carry them through the wear and tear of what may be called ordinary life for more than 40 or 50 years. The vital energy of the tissues of these organs is exhausted prematurely;

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they are already old at 45; degeneration of the muscle- and other cells sets in early, reminding us of the essential myopathic paralysis of children. This type of case is described as "family heart," for it also runs in families—three, four, five, or more members of which, as in a number of instances that I have observed, may have all died suddenly of cardiac disease—some of them at an early age. Similarly, it is not by any means unusual to find quite young subjects, say of 30, with vessels already much enlarged; and I may add, equally young subjects with their lungs already emphysematous although there is no history of respiratory strain, reminding us of the very common association of emphysema with arterial sclerosis in old age. These cases of family heart and premature arterial sclerosis are the links that connect disease of the heart and arteries in middle and advanced life of definitely pathological origin with the genuinely senile changes in the tissue-elements which render existence untenable at last, and which may be said to be the result of the exhaustion of their nutritional activity by "the thousand natural shocks that flesh is heir to."

LECTURE II.

MR. PRESIDENT AND GENTLEMEN,—In my last lecture I presented to you a brief account of the condition of the organs of circulation between the ages of 40 and 75, and I then proceeded to direct your attention to the principal influences which may disorder and damage them during that period of life. I will now attempt to describe the clinical characters and course of the affections of the heart and arteries, as I have observed them, in connection with these different influences respectively—whether gout, mechanical stress, syphilis, or other. Thereafter, if time permits, I may be able to examine the different symptoms and signs individually in order to discover the value of each as a guide in diagnosis.

Now, as I have already pointed out, the causes of cardio-vascular disease in the second half of life are very often, indeed usually, complex. It follows, therefore, that if we desire, as we do most particularly, to discover the effects of each pathogenetic influence as distinguished from the others, we must begin our study with

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the simplest, or purest, or most definite of all, and proceed from it towards those which are more difficult, as well as to combinations of causes. It is easy to adopt this method in our present inquiry.

Tobacco Heart.

We have in tobacco a single distinct influence at work; one that is universally acknowledged to affect the heart and vessels, and the physiological action of which is understood; one, further, that can be removed (perhaps not without some difficulty, for I have had a patient plead for his pipe with tears in his eyes), and certainly that can always be resumed with remarkable readiness—in a word, a most favourable subject of observation by experiment. It is well, too, to begin the study of tobacco heart in young men, whose circulation is still structurally sound, and thereafter to follow up the subject in middle-aged and old persons. Adopting this line of inquiry, I have found that the uncomplicated effects of tobacco on young healthy hearts, as they present themselves clinically, are: palpitation in every instance; a sense of irregular action,* post-sternal oppression and pain in half the cases; and in one out of every eight sufferers either angina or uncomfortable sensations in the left arm. Faintness or actual faints occurred in one-third, and giddiness and a feeling of impending death in a smaller proportion. Turning to the physical signs, the heart proves to be of ordinary size in 50 per cent. of the patients; in a few it is very slightly enlarged; the præcordial impulse is often very weak, but occasionally increased in force and frequency, and almost as often irregular as not; the pulse tension, with insignificant exceptions, I have always found low. Very interesting, in the light of what I shall tell you later on, is the fact that of 20 of these patients complaining of the heart not one presented a cardiac murmur beyond a weak mitral systolic bruit, varying with posture or cubitus. This is in accordance with the teachings of pharmacology —that tobacco acts on the terminal branches of the vagus.

Now we are in a position to study the tobacco heart in a man of 40; and again let us begin with a man who is sound, active, and healthy otherwise. He complains of his heart, and recognises

* A medical friend who has suffered from tobacco heart assures me that at one period he could distinguish the contractions of the auricles and ventricles.

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willingly (for he belongs to our own profession), in the discomfort and anxiety from which he suffers, the penalty of having smoked for years the strongest and blackest tobacco that he could buy. Yet his heart is not enlarged, and the cardiac sounds might be described as ordinary were they not peculiarly irregular, the frequency changing every moment and a falter occurring at short intervals. There is not a trace of murmur to be found in connection with the valves and orifices. At ages over 40 a clinical study of the tobacco heart is highly instructive from a practical point of view. Whilst palpitation is still the common complaint, pain, including angina, is put forward more prominently, and so are faintness, actual faints, a feeling of impending death, and a sense of cardiac irregularity, each intermission being accompanied with a sudden stab through the præcordia. Some of you will remember Mr. Barrie's quaint account in 'My Lady Nicotine' of what he calls the horrors of his smoking days, when the pain at his heart made him hold his breath—"a sting" as he describes it, and he believed he was dying. In these subjects the heart is more frequently found to be large and feeble; the same weak systolic murmur is occasionally to be heard; the radial pulse is often irregular, and the vessel wall naturally thick. This, you will notice, is a combination of symptoms and signs sufficient to alarm the casual observer. But when we examine it more deliberately, in the light of our study of the tobacco heart in young subjects, on the one hand, and of our knowledge of the normal or natural condition of the heart and arteries at 60, on the other hand, we are able to reassure ourselves and our patients. We are justified in concluding not only that every cardio-vascular lesion which may be found in tobacco smokers is not to be put to the credit of tobacco, but, *vice versâ* (and this is of more interest to us in our present inquiry), that every præcordial pain, angina, faintness, or irregular pulse in a man of 60 with a full-sized heart is not to be hastily regarded as evidences of grave disease without further inquiry as to his habits. The cardiac enlargement and large pulse may be nothing more than the result of a life of bodily and mental activity: the præcordial distress may be the result only of tobacco. How very necessary this caution is will be impressed upon your consideration by the two following cases. The first is that of a man of 60, actively engaged in professional pursuits, who first suffered from præcordial pain of an alarming character four and a half years ago, and has had

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attacks since, particularly during exertion and after meals. One day last autumn, at the end of many hours' hard work, cheered by at least 18 cigarettes, he was rushing off to dine with a friend when he was suddenly seized with præcordial pain which he described as fearful, radiating down the left arm. He broke into a cold sweat, thought that his last hour had come, and for a short time had impairment of consciousness. Shortly after this event he took the advice of his doctors and gave up tobacco (shall I say for a time?), and from that day to this, now six months, he has had no further trouble with his heart.

The second case is equally striking. A man of 55, of fairly active disposition and somewhat full habit of body, was suddenly seized with angina pectoris in October, 1899. The pain was of a dull bursting character over the region of the heart, and it passed into the left shoulder, down to the elbow, and settled particularly in the wrist. At the same time there was pain in the upper maxillary region. The heart slowed down from 75 to 50, and the sufferer felt that he was dying. From that time anginal attacks occurred in rapid succession, five, six, nine or even eleven in a single day; occasionally they came on in the night. This experience continued for nearly two months on end; indeed, it was six months before the angina finally ceased. It was instantly relieved with amyl nitrite; nitro-glycerin was unsuccessful. In the course of giving advice to this patient I fortunately discovered that he had just laid in a stock of 2,000 cigars. The line of treatment was obvious; and the result has been, as I have said, complete recovery.

I have dwelt on the subject of tobacco heart perhaps longer than was necessary, addressing, as I am, a meeting of practitioners of experience and not a class of clinical students. I have done so to bring home to us an important consideration which we are all apt to overlook in diagnosis and still more in treatment, namely, that whether in an ordinary senile heart, or in a heart that is the seat of chronic valvular disease, or in arterial degeneration, something more than the pathological changes have in many instances to be regarded — usually some entirely adventitious disturbance which alone calls for treatment, such as indigestion, flatulence, worry, a bronchial catarrh, or it may be free indulgence in tobacco, tea or coffee.

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The Heart in Alcoholism.

Let us now pass on to consider, from the clinical point of view, the effect on the organs of circulation of another morbific influence of a definite kind, namely, alcohol, or perhaps more correctly alcoholism, leaving on one side the questions of form and strength of the drink taken and its purity.

The direct effects of alcohol on the heart and the blood-vessels are by no means so easily determined as those of tobacco. In the first place, they are complicated with the many indirect effects which it produces on these organs by deranging the functions of alimentation and assimilation, the nervous system and the kidneys, and with the secondary effects on the vessels and heart of chronic nephritis due to the same cause. In the second place, as we saw in my first lecture, alcoholism is very commonly associated with nervous strain, with gout and goutiness, with tobacco, with syphilis, and not uncommonly with two, or more, or all of these together. Eliminating as far as possible these sources of error by careful selection of cases, I find that the alcoholic heart in middle and advanced life presents clinical characters, as a whole, very different from those of tobacco heart, which we have just studied. The most striking and important of these are the evidences of actual pathological change in the size of the heart and the condition of the myocardium. We found no evidence that tobacco causes serious cardiac enlargement, and neither may alcohol in quite young subjects, who present mainly excited action both in force and in frequency. But of 28 cases of alcoholic heart which I examined clinically in connection with the present inquiry in older subjects, only two hearts were of ordinary size (and as a matter of fact both of these patients were under 40 years of age). This result is in accord with my pathological observations. For instance, I have carefully followed the condition of the heart in an intemperate man of 43, and *post mortem* found the heart to weigh 17 ounces, to be universally dilated in all its chambers, and to present enlargement of the mitral opening without valvular lesion, corresponding with a weak apex systolic murmur heard during life. These results are also in accord with those in Dr. Maguire's cases of acute dilatation of the heart from alcoholism, which he recorded as long ago as 1888* (when, I may add, doubts were expressed of the correctness of his conclusions by several of our best authorities

* Maguire, 'Trans. Clin. Soc. of London,' vol. xx, p. 235.

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on cardiac disease), and one of which occurred in a man of 23. Dr. Mott has found fatty degeneration of the myocardium in patients dying suddenly during alcoholism.* With hardly an exception the præcordial impulse is weak—indeed, it is often imperceptible; the sounds are small and feeble, and may be almost inaudible; in 20 per cent. of my cases a weak apex systolic murmur could be heard, varying with posture and from day to day, significant, no doubt, of leakage through a dilated mitral opening. The alcoholic heart is irregular and accelerated in about half the cases. The pulse tension is usually low; in one-third of the instances the radial artery was sclerosed; in one-fifth of them there was slight albuminuria; the legs may be œdematous. The complaints which the patient makes to us are commonly of palpitation of the heart, faintness or actual faints, and præcordial pain; but it is very interesting to observe that angina pectoris is rare in the alcoholic as compared with the tobacco heart, in the ratio of 4 to 15 per cent. With these cardiac symptoms proper there are usually associated the sweats, coldness of the extremities, and depression, sinking or lowness characteristic of alcoholism. But it is unnecessary for me to fill in this outline sketch of the condition of the victim of either acute, or sub-acute, or chronic alcoholism. I would rather mention one form of acute alcoholic failure of the heart of which I have recently seen a case, but which appears to be rare. A middle-aged woman, at the end of each of her repeated bouts of active alcoholism, has violent sickness; prostration passes into collapse, and for 24 hours or more she lies flat on her back, with all the phenomena of what may be called acute air-hunger. She breathes loudly and deeply, at the rate of 36 per minute, with groaning expiration. The expression is alarmed, despairing and imploring; the nose is pinched; the surface is livid and cold; the breath is cold; the pulse is practically imperceptible at the wrist; and yet the præcordial impulse is both strong and extensive, and the rate of the heart greatly accelerated. The condition is at once one of collapse and urgent dyspnœa, quite as in one form of so-called diabetic coma; and it is further remarkable in that it may pass off suddenly after having lasted, as I have said, for many hours. It is difficult to resist the conclusion that in such a condition as this some product of alcohol, present in the blood, is the cause of the remarkable phenomena.

* Mott, "Cardio-Vascular Nutrition and its Relation to Sudden Death," *Practitioner*, xli, p. 161.

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The course of alcoholic heart in older subjects usually becomes affected by the appearance of cirrhosis of the liver, Bright's disease, neuritis, and possibly dementia. The method of termination is very various, including ordinary cardiac failure with dropsy; and sudden death occasionally occurs. Still, recovery is far from being impossible, even after dropsy has made its appearance, for the size of the heart may decline under strict abstinence from alcohol, and the œdema disappear. This is a matter of great practical interest, inasmuch as we know that, whilst the effect of alcohol on the heart and circulation is for a time functional only, it presently becomes truly nutritional, as in the cases I have just narrated. The myocardium is not always beyond repair, although it and the fine myelinated fibres of the vagus undergo fatty degeneration according to Dr. Mott,* just as there are changes in the pyramidal cells and fibres of the cerebral cortex in the alcoholic; and the feebleness and irregularity of the heart are analogues of the depression and confusion of the brain.

Gout.

Of the many instances of disorder and disease of the heart and arteries that I have met with in gouty subjects at or over 40 years of age, I have made a careful study of 29 taken from my private case-books. Twelve of these (10 M. + 2 F.) had suffered from ordinary articular gout, the other 17 (6 M. + 11 F.) had irregular gout, as defined in my first lecture. The average age was 62. In no instance was there albuminuria. The physical condition of the heart and arteries and the patient's complaints were remarkably alike in the two groups. In 23 of the 29 the heart proved to be enlarged, either on one or both sides. In less than half the number the cardiac action was feeble; in a small number the impulse was entirely imperceptible; the heart- and pulse-rate was ordinary; the rhythm was but seldom irregular. It is a very remarkable fact that in no fewer than 12 out of the 29 cases of gouty heart a systolic murmur was to be heard over the aortic area, the manubrium and the right carotid, significant of disease either of the aortic arch or of the aortic valves—in every instance independently of rheumatism or other obvious cause than gout. This result is an interesting confirmation of the pathological observations of Dr. Norman Moore

* Mott, 'The Croonian Lectures on the Degeneration of the Neurone,' p. 110, 1900.

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and Sir Dyce Duckworth given by the latter,* and of the statement of Murchison† of his experience "that atheroma of the arteries at an unusually early period of life, and diseases of the aortic valves which are not congenital, and are independent of injury or rheumatism, are met with far oftener in persons who are the subjects of the lithic acid dyscrasia, or who have had gout, than in those who have had no such tendencies." In seven (25 per cent.) of my cases a more or less developed systolic murmur was found in the mitral area, significant either of valvular atheroma and sclerosis or of leakage from ventricular dilatation. Very curiously I have never met with aortic incompetence of gouty origin. When no murmur exists the cardiac sounds are commonly somewhat feeble, and the second sound may be of ringing quality—this more commonly in goutiness than in developed gout. In agreement with this connection, the radial pulse is more often tense in the subjects of irregular than of regular gout‡; altogether, high tension is found in more than one-half of the cases. The great majority presented distinct thickening of the arterial walls. As I suggested in our study of the etiology, these pathological changes appear to be the result of malnutrition of structures (the myocardium, valves and arteries) worked at high pressure; and in addition to the local disturbance of metabolism in the cardiac and arterial walls, which are fed with gouty blood, there is the damaging effect on them of similar disease of the *vasa vasorum* and *vasa cordis* or coronaries.§ Besides a distressing feeling of irregularity, fluttering or intermittency, and dyspnœa on exertion, men who are the subjects of gouty heart complain most frequently of præcordial pain; women more often of palpitation and faintness or actual faints. In quite one-fourth of all cases of gouty heart the pain is anginal, and such angina may be of the most pronounced type. A friend of my own, aged 60, began to suffer from gouty angina (diagnosed to be such by his family physician 40 years ago) at the age of 20. Almost every year, somewhat more frequently for the last 12 years of his life, he was liable to be seized with intense pain in the left side of the chest, which rapidly extended to the neck and down the left arm, with

* Dyce Duckworth, 'A Treatise on Gout,' 1889, p. 108.

† Murchison, 'Clinical Lectures on Diseases of the Liver,' 3rd edition, 1885, p. 637.

‡ *Cf.* Clifford Allbutt, "Selections from the Lane Lectures," *Philadelphia Med. Journ.*, January 27th, 1900.

§ Mott, *Practitioner, loc. cit.*, p. 169.

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tingling in the hand; a sense of great constriction in the chest; faintness, and difficulty of breathing. He had immediately to rest, whereupon the distress subsided; but it did not perfectly disappear for hours. On different occasions also, in connection with these anginal seizures, I have known him have free hæmoptysis, complete unconsciousness, vomiting, and sudden violent evacuation of the bowels. He also suffered from articular gout, and from irregular gout in almost every possible form.

Obesity and Glycosuria.

Closely related to goutiness is a clinical type of disturbed metabolism, mainly characterised by corpulence, a bulky, flabby build, and glycosuria. Of this type, represented by 12 cases in my series, nine had glycosuria and two albuminuria; eight were men; the average age was 58. Only one had suffered from true articular gout. Here, again, the interesting observation was made that no less than three-fourths of the number had a systolic aortic murmur, none of them a regurgitant aortic murmur, and nearly one-half of them an ill-developed mitral systolic murmur. Thus there appears to be more liability to atheroma in the gross corpulent diabetic even than in the gouty man. In all the cases the heart appeared to be enlarged, but accurate physical examination is difficult or impossible in many of these subjects. The impulse was more often feeble than in the gouty; the cardiac sounds were equally weak, and the second aortic sound was occasionally accentuated. The pulse corresponded with the gouty pulse in thickness and tension, but it was more often found irregular and hurried. As for the complaints of corpulent and diabetic patients, they prove to be very similar to those of gouty individuals in respect of pain, but neither palpitation, faintness nor irregularity was so often mentioned.

It must not be understood from what I have just said in my account of these cases that all disturbances of the heart in gouty subjects progress to valvular or vascular degeneration, with associated cardiac enlargement and degeneration. The friend whose case I have just described at some length had led an active life, as I said, for 40 years; and, as I hope to show in my next lecture, the condition is amenable to treatment if this is based on a correct appreciation of the cause that is at work. But it is equally true that if correct advice be not given, or if it be given but be

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neglected, as happens so frequently, the endocardium and the aorta and other arteries steadily degenerate, chronic interstitial nephritis makes its appearance, and the patient dies either slowly from cardiac failure or suddenly from cerebral hæmorrhage.

Cardiac Strain.

I will now proceed to consider the clinical characters of a class of cases in which you, Sir, are particularly interested—strain of the heart in middle and advanced life. To make this part of my subject more plain, I will discuss in the first place acute strain of the heart as it occurs after the fortieth year; afterwards I will consider the condition of the heart and arteries at this age in persons who have strained them in youth or early manhood.

A man of 65, who came to me complaining of his heart, gave the following account of the commencement of his trouble:—Four years previously, on making a very hard stroke at golf (the ball was bunkered), he was suddenly seized with a sensation of something having happened in his heart. He played up to the next hole, but now felt the chest oppressed; he sat down and got relief. This experience was repeated, and he gave up the round. Walking home two miles, he had to sit down occasionally with the same feeling. Ever since that occurrence exertion had produced the same effect. I found the ordinary physical signs of enlargement of both sides of the heart; a scarcely perceptible impulse; the cardiac sounds extremely feeble, the second being of a finely ringing quality; the pulse tense, quiet and regular, but the radial artery by no means sclerosed. The patient's principal complaints were of irregular action of the heart, which troubled him on lying down or when he was dyspeptic; and, as I have said, of post-sternal oppression on exertion. This man had neither albuminuria nor emphysema, but he had frequently suffered from ordinary articular gout. Belonging to this type of cardiac strain I have notes in all of 11 cases, which I will briefly summarise. Eight were men, three women; and their average age was 56. In all but one of them the heart was large, with feeble præcordial impulse; the sounds were small and feeble; the aortic diastolic sound was often ringing; in but one case was there a murmur—aortic systolic; with few exceptions the rhythm and the rate of the heart were ordinary. In half the cases the radial artery was sclerosed; in the majority the tension

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was not increased. Persons who strain their heart after middle life chiefly complain of præcordial oppression, dyspnœa on exertion, a sense of palpitation and irregular action of the heart, and pain, which may amount to angina; and they may tell us that distress and disability in these different forms have troubled them for years. You will have observed that the man whose case I have read in particular was the subject of gout; and this brings me to the interesting fact that of these 11 individuals seven were gouty. We have already seen how greatly reduced is the resistance of the cardio-vascular system in gouty subjects; and we are prepared for the readiness with which their heart may be strained by exertion—a matter of obvious importance prophylactically. In other cases not included in this group the strain took the form of valvular injury, or it affected hearts already the seats of old-standing valvular lesions of rheumatic origin; but the present is not the occasion to discuss these. Nor need I add that a not infrequent result of acute strain of the aged heart, whether its valves have been already damaged or its myocardium badly nourished, is sudden death. Now, I can understand that some of my audience might object to the application of the term "strain" to the effect of exertion in gouty and senile hearts, just as Professor Clifford Allbutt, who is universally recognised as the earliest and highest authority on this subject, suggests that the clinical expression "strain of the heart" relates only to comparatively young subjects free or nearly free from degeneration.* It might be contended with great reason that exertion in these subjects is not a cause of strain or dilatation of the heart, but simply a test, as it were, or the proof, of cardiac debility and disability. But when we come to consider cardiac strain a little more closely, it may be just as easily maintained that every dilated heart, every dilated cardiac chamber, every dilated blood-vessel has been strained. Whether, on the one hand, valvular disease, Bright's disease or emphysema, or, on the other hand, myocardial degeneration, has disturbed that cardinal condition of a normal circulation that the driving power must always exceed the resistance ahead, over-distension and dilatation of the cavities, with excessive stretching of their walls, constitute or consist in mechanical strain. However, laying aside theoretical discussions of this character, the great practical fact remains, that when the aged and ill-nourished heart is over-distended from sudden and severe

* Clifford Allbutt, 'System of Medicine,' v, p. 843.

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exertion, neither the elastic nor the muscular tissues of its walls can bear the strain; it becomes dilated; for the future it acts at a mechanical disadvantage; and as often as this may occur it suffers still more in its efficiency. On the other hand, it is really in confirmation of this consideration, though apparently in opposition to it, that the heart may diminish somewhat in size, and præcordial distress disappear, under strict treatment continued for a sufficient length of time.

Strain before Forty.

A more interesting group of cases than those which I have just discussed is composed of persons who have strained their hearts in youth or early manhood, have never been quite well since, and in middle or advanced life are at last driven to us for help. Cases of this character would furnish excellent material from which we might attempt to judge of the after-effects of excess or abuse of muscular exercise in the young. This is a tempting subject of discussion, but one far too long and much too important to be taken up casually at this time. Therefore, I will content myself with submitting to you as plainly as I can certain facts bearing on it that have come before me in my present inquiry, along with a few simple observations of a practical bearing. First, then, let me read to you the history of what I should call a typical case of the kind. A man of 69 complains that as often as he walks any distance or climbs a stair he is arrested by a distressing sense of having a bar across the lower end of the sternum, breathlessness, irregular palpitation of the heart, and a very little choking in the throat; the discomfort has lately deserved the name of pain. His heart is very large, the area of præcordial dulness being increased in all directions and measuring transversely 7 inches. The impulse is weak over the left ventricle, but definite in the epigastrium; the sounds come in couples—moderately good and very weak respectively, without murmur; and the radial artery is large and thick, with rather low pressure and irregular rhythm. It turns out that for the last 40 years these uncomfortable feelings have troubled the man more or less, and that at three different periods of his life—at 31, at 42 and at 67—they increased so much as to incapacitate him for many months, the first time with a sudden sense of something snapping in the heart, the second time with a faint, and always, as he believes, consequent on overwork. Now this man never had rheumatism, nor gout, nor

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syphilis, and was always a temperate, careful liver; and he volunteers the statement that he first felt his heart at Cambridge, where he was captain of his College boat, and was tried for the University boat but felt that he was not fit for it. Belonging to this type of cardiac strain I have selected 11 cases. The heart is always found to be enlarged, and in about one-half of the cases it is irregular. It may be weak and beating at the ordinary rate, but in other instances it is increased both in force and frequency. Only in quite exceptional cases did I meet with endocardial murmurs in this group of old strained hearts; as a rule the sounds were ordinary, with a disposition to accentuation of the aortic second sound. High tension and sclerosis of the radial artery were respectively found in about one-half of the cases. The patients complain most commonly of a distressing sense of irregular palpitation of the heart, and very commonly of præcordial pain, but rarely of angina. Faintness also is sometimes mentioned. Let me hasten to add, with respect to these cases, that they do not include any instances of direct injury of the valves mechanically. Rupture or stretching of the aortic and mitral valves during exertion furnishes us with some very remarkable clinical cases; but it is with parietal strain that we are concerned now—mechanical over-stretching of the cardiac walls, which are thereafter left with but a narrow margin of the elastic and muscular reserve required by them to meet trying circumstances of any kind, particularly exertion. The subjects of dilatation of the heart from mechanical stress suffer by no means from what is commonly called "heart disease," excepting in the worst cases, but yet they feel their hearts comparatively, and it may be seriously, disabled. Naturally they associate these feelings of disability with fresh attempts at exercise or exertion, as in the case which I have just read. I pointed out in my first lecture that such exertion is not by any means connected with the patient's occupation or daily duties, but quite often occurs during unwise attempts on his part to resume at 50 the athletic exercises of his youth in order to reduce his weight, relieve his liver, or dispel gout. It is not wonderful that under such circumstances a permanently enlarged and badly-nourished heart should become embarrassed, or even seriously deranged or still further strained. I have known a man of 43, going straight from London to the Alps, have not only præcordial distress but dropsy of his legs after his first ascent in his regular holiday. Indeed, the man who has reached later middle-life with

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his heart enlarged by years of great bodily activity in youth, and settles down quietly on retirement, let us say from the navy, sometimes finds that ordinary exercise is sufficient to produce alarming cardiac distress and curious loss of courage, obviously due to the muscular tissue of the thickened cardiac walls having fallen quite out of condition. How instructive, for instance, is the following case:—A gentleman of 60, who has led from his boyhood upwards a life of physical activity and at the same time of temperance, and has suffered from neither syphilis nor rheumatism, but possibly from a very mild attack of gout, settles in a relaxing provincial town, continues to eat heartily, and considers that a little work in the garden is sufficient exercise for him. He increases in weight, his breath gets short, his heart flutters, and now he begins to get anxious about his health, fancying, as he says, that he has all sorts of diseases—a disposition to worry about himself which is entirely new and provoking to him. I find his heart very large and feeble, the cardiac sounds scarcely audible, and in the mitral area a well-developed systolic murmur. The patient is ordered to reduce his diet as a whole and in respect of carbo-hydrates, to return carefully to walking exercise on the level, and to take a calomel purge followed by a saline twice a week, and a mild strychnine mixture. He improves, and continues to do so; is able to walk miles without discomfort; and in the course of two months not only do I find his heart reduced in size on physical examination, but I fail to hear the apical murmur, which must have been produced by dilatation of the left ventricle. The bearing of such a case as this on the pathology, prevention and treatment of certain cases of heart disease in old subjects will be obvious to all.

We must be careful, however, to observe that neither unwise abandonment of wholesome exercise, nor ill-advised return to physical exertion, separately or in succession, can be regarded as the only cause of the recrudescence of cardiac distress after 40 in those who have strained their circulation in youth. Any one of the many circumstances that produce cardiac failure and dropsy in chronic valvular disease may lead to embarrassment and fresh dilatation of the simply enlarged heart: anæmia and chronic disease, the acute specific fevers including pneumonia, emphysema, granular kidney, gout, syphilis, tobacco and alcohol poisoning, as well as anxiety and worry, and in women the advent of the menopause; and I may say here parenthetically that pains at the heart in athletic youths are

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sometimes due to the tobacco smoking in which they often indulge socially when the exercise is finished—not to strain at all. In these cases of old cardiac strain, as in every form of chronic valvular disease and of chronic heart disease of all kinds, not only the original and permanent lesion, but the recent and probably temporary circumstance that caused the failure has to be ascertained and fully respected in connection with prognosis and treatment.

Syphilis.

Syphilis appears to account for a very considerable proportion of the more serious cases of heart disease which we meet with in older subjects—excluding of course chronic valvular disease originating remotely in endocarditis. But I ought to repeat here what I have already mentioned, that syphilis as a cause of cardio-vascular lesions is very often associated with other morbific influences, particularly strain and alcohol. Of its position as the principal cause of grave disease of the valves as distinguished from the walls of the heart, originating in middle life, there can be no question. No fewer than nine out of 28 cases, of which I have private notes, were the subjects of double aortic disease; practically all the others had a loud ringing second sound over the aorta, significant of degeneration; pain of anginal type in half the cases was the prominent complaint; and two-thirds of the subjects had sclerosis of the radial artery. When we consider that syphilis does also affect the myocardium primarily; that fibroid disease, chronic aneurysm and fatty degeneration of the heart are all traceable to specific disease of the coronaries in many instances; and, finally, that many of the subjects of syphilitic cardio-vascular disease have perished before 40, the magnitude of this cause can be fully realised. I believe that the profession in general have not yet woke up, if I may say so, to the gravity of this subject. How seldom we inquire for a history of specific disease in patients coming to us with cardiac disease in middle life! To no one, as far as my reading goes, are we so much indebted for the truth on this subject as to my friend and colleague Dr. Mott. Thirteen years ago he published a paper on 21 cases of sudden death from cardio-vascular disease, and in nine of these there was a history of either actual or probable syphilis. What was of greater interest, however, at that early date, he drew attention to the association of syphilitic cardio-vascular

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lesions with Bright's disease in the broad acceptation of the term. Dr. Mott's work in the interval on syphilitic lesions of the arterial system of the brain has been so brilliant, and is so generally known, that it requires nothing more than this appreciative mention by me, and it saves me the trouble of an excursion into the subjects of cerebral hæmorrhage and thrombosis in connection with these lectures.

Nervous Strain.

I confess that it is difficult to say much that is of real diagnostic value on the clinical aspect of cardio-vascular disorders and disease from nervous strain. As I remarked in discussing this subject from the etiological point of view, several factors come into play besides nervous excitement followed by exhaustion and their effects on the heart, great vessels and cerebral arteries; and the cases, therefore, are found to present a puzzling variety of features. Certain clinical characters are, however, common to the majority. Arterial tension is high; the radial artery is thick, sometimes markedly so; the heart enlarges; and in about one-half of the cases a systolic murmur is to be heard either in the aortic or in the mitral area, significant of chronic endocardial lesions—all readily intelligible results of cerebral strain in the light of our knowledge of the innervation of the cardio-vascular system. I have already pointed out that in some of these patients polyuria and temporary albuminuria occur along with the high tension and the increased action of the heart; but the heart may fail later on. The direct cardiac symptoms of which they complain are of the ordinary character, palpitation with accelerated cardiac frequency and pain (not angina) being the most common at first, feelings of indescribable discomfort and suffocation in the more advanced stage. A great deal that I might have had to say on the very interesting subjects of pseudo-angina, and the climacteric and pre-climacteric disturbances of the circulation in women, I am reluctantly compelled to omit from want of time.

After having reviewed, as I have attempted to do, the principal clinical characters of the disorders and diseases of middle and advanced life under their several causes, it may appear for a moment strange that the most important of all the clinical types of cardio-vascular degeneration has been mentioned only incidentally. This is chronic Bright's disease, which, from its complex pathological relations, its widespread effects on the heart and

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circulation and the organs that they supply, and the far greater gravity of these than those of any of the other causes which we have studied (unless it be syphilis), is a subject of endless interest to us all. Fortunately for me my immediate predecessor in this chair on the medical side, our distinguished Fellow, Dr. Samuel West, took for his subject the "Clinical Aspects of Granular Kidney," and thus relieved me of a task which he was so much better able to discharge than I. Emphysema must also be passed over with the single remark that it is a very common accompaniment both of vascular and cardiac degenerations.

I trust you do not conclude that the description which I have just given you of the clinical characters of these various disorders and diseases of the heart is in any sense complete. It only relates to the most prominent symptoms and signs as they present themselves to us in what might be called the every-day life of the patient, at a period in the history of his case precedent to failure. In all of them there may occur occasional attacks of acute embarrassment of the heart and lungs from one or more of a variety of causes, such as indigestion, excitement or over-exertion. Sooner or later, also, there occurs either cardiac dropsy—insidiously developed after increasing local distress, growing dyspnœa and "bad nights"; or Bright's disease; or cerebral thrombosis or hæmorrhage, or acute myocardial failure with angina: or the patient dies from failure of the heart in the course of some acute disease such as bronchitis or pneumonia. Neither have I considered it necessary in this lecture to dwell on some of the rarer phenomena occasionally met with, such as tachycardia and bradycardia. I may have occasion to refer to them next time in connection with prognosis.

LECTURE III.

MR. VICE-PRESIDENT AND GENTLEMEN,—In this, the concluding lecture of the series, I will attempt to deal with the applications of the facts and considerations which I submitted to you on the two previous occasions when I had the honour to address you. I trust that what I then laid before you proved to be of some interest. Let us see now whether it is practically useful. However much the

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etiology and pathology of the diseases and disorders of the heart and arteries in middle and advanced life may deserve study as matters of natural history, we should be disappointed if they could not be turned to account in prognosis and treatment. These are the subjects I propose to discuss this evening.

Now, prognosis and treatment, to be rational and useful, have to be based on as full and as correct a diagnosis as knowledge permits. The present disposition is to fall short of this; to rest content with an incomplete diagnosis. We say that the patient's "heart is dilated," that he has "arterial degeneration," that there is "fatty degeneration." But you will remember that we have found that cardiac dilatation may be present in every kind of cardio-vascular degeneration; that the arteries are naturally enlarged and thickened after middle life, and that we refused to call these changes morbid. Clearly, therefore, a purely anatomical diagnosis of this sort is insufficient. If you are asked what the prognosis is of fatty degeneration of the heart, you answer that you must first be told whether syphilitic or gouty disease of the coronary arteries, or strain, or alcoholism, or phosphorus-poisoning or anæmia is the cause of it. When you are planning the treatment of dilatation of the heart you first determine whether the dilatation is a result of the stretching of a sound heart by overfilling during muscular effort, or of the insufficient emptying of failing chambers with degenerated and feeble walls. Obviously what we ought to determine in these instances and in every instance is the origin of the disease. The ultimate diagnosis to be reached for practical purposes is the etiological diagnosis.

Is this possible? Does our knowledge of the nature, characters and course of these cardio-vascular affections enable us to say, after investigating a case, what the kind of the pathological change is that constitutes the disease, or in what respect the physiological mechanisms are disordered? Can the cause of these degenerations of the heart and arteries be determined in each instance? How is the practitioner to proceed to do so? What method might be followed with advantage in making a complete diagnosis of heart disease in older subjects?

A man of 60 consults us about his heart. He says that it has caused him a good deal of concern lately. More specifically he describes a sense of oppression behind the sternum as often as he exerts himself, and palpitation with consciousness of irregular

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cardiac action when he goes to bed. We inquire for other familiar cardiac symptoms, such as pain, angina, fluttering, faintness, giddiness, and a sense of impending death. We find that one or more are present occasionally, and that they have increased in number and degree during the last few months or years. Perhaps cough, nocturnal orthopnœa and dropsy may be beginning to give trouble. The next part of the inquiry relates to the patient's previous history from childhood upwards. Which of the acute diseases has he had? Acute rheumatism, chorea, scarlet fever, typhoid, diphtheria and influenza must be mentioned individually, and in women the nature of any puerperal disease from which they may have suffered. Gout, irregular gout, gravel, eczema, sick headache, asthma must be inquired after with the same minuteness, and so must syphilis. We next hear an account of any accident which the patient may have met with, such as a blow, or a fall from a horse or a carriage. This brings us naturally to question him about his occupation and modes of relaxation and amusements—whether active or sedentary, regular or irregular, their characters otherwise, and their direct effects, including strain. More difficult to elicit is a correct account of the patient's habits—in respect of food, stimulants and tobacco, and his manner of life generally. As I said in my first lecture, this is an inquiry which the family practitioner has an opportunity to carry out much more successfully than the hospital physician or consultant. The family practitioner has known for years of his cardiac patient's work and worries; it may be of his large eating, of his secret drinking, of the history of syphilis in earlier years. It is always well also to inquire after a family history of gout, rheumatism and heart disease. A list of questions like this sounds far more formidable than it is in reality. A few minutes suffice to arrive at the truth. We already have a pretty fair notion what we have to deal with, whether strain, gout, syphilis, tobacco, an old rheumatic lesion, or a combination of two or more of these.

We next proceed to physical examination, beginning with the pulse and arteries, and passing on to the heart and associated structures. The characters of the præcordial impulse—particularly the seat of the apex-beat and the strength of the impulse—are closely (I might almost say laboriously) investigated. We must never yield to the temptation to disregard weakness or absence of the impulse. Like many other negative signs it is apt to be overlooked. Then the præcordial dulness is mapped out by means of

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light percussion. Finally, auscultation reveals to us the presence or absence of murmurs and the characters of the sounds—in the standing and recumbent postures, and, if necessary, after a little exertion. The relative loudness of the first and second sounds over the different parts of the præcordia is particularly worthy of note.

Now let us suppose that we have found a mitral systolic murmur. We ask ourselves whether it is structural or whether it is functional, that is, due to relaxation and dilatation of the ventricular walls. If structural, with which (if any) of the diseases elicited in the man's previous history would it correspond? Most probably with gout or glycosuria. Thus we attempt to connect the lesion with its cause, and the cause with its effects, and have reached the ultimate diagnosis. So with other valvular murmurs: for example, an aortic diastolic murmur proves to be related to syphilis. If there be no murmur audible, we naturally think of dilatation with failure, or of enlargement from strain, from Bright's disease, from arterial sclerosis, from emphysema, from an insufficient or impure blood-supply in the coronary arteries, from disordered innervation, or from some rarer cause, such as adherent pericardium; and then, with these associations in our minds, we review once more the patient's history, and generally succeed in our diagnosis.

Here let me recount the significance of the principal signs and symptoms which I detailed to you in my last lecture, considered in the reverse order on this occasion, some of which are of real value in differentiating the causes of cardio-vascular degeneration. To begin with negative facts: a mitral pre-systolic murmur is never significant of a degenerative lesion. Secondly, when we meet with an aortic diastolic murmur, whether alone or along with an aortic systolic murmur, we may safely conclude that we have to deal with something more than atheroma produced by regular or irregular gout and associated metabolic disturbance, cardio-vascular disease of nervous origin and alcoholic or tobacco heart, even if there be evidence of the presence of one or more of these in the case. Aortic incompetence developed in later life is the result of syphilis, or of acute or chronic valvular strain; but, of course, many instances of this lesion met with after the age of 40 can be traced to juvenile endocarditis of rheumatic or other origin. Always a serious lesion, aortic incompetence due to syphilis, or to syphilis and strain, is particularly grave, as being so frequently associated with coronary

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disease and consequent myocardial degeneration—fatty or fibroid, acute softening, and sudden fatal failure. A fully-developed basic systolic murmur, audible over the aortic area and manubrium and along the course of the carotid, is a very common sign of atheroma of the aortic arch and valves and great vessels in association with regular or irregular gout, diabetes, corpulence and allied disorders of nutrition. It is also one of the physical signs of syphilitic and traumatic affections of the aorta and aortic valves and of remote endocarditis. Further, these lesions are so often accompanied by similar degenerations in the coronary arteries and consequent myocardial degeneration, that the basic systolic murmur ought at least to raise the suspicion of this in the observer's mind. An ill-developed basic systolic murmur is not uncommon in alcoholism, chronic Bright's disease and nervous strain, but it is difficult to dissociate from anæmia. A fully-developed systolic murmur audible in the mitral area, I mean independently of ventriculo-auricular leakage in cardiac failure, is usually traceable to early endocarditis of rheumatic or other origin, rarely to injury, including ordinary juvenile strain of the valves or walls, or to Graves's disease. But in some instances it is unquestionably due to valvular atheroma and attendant sclerosis, caused by gout or other disturbances of metabolism, including the effects of free living; and in these instances the observer must not overlook the possible association of coronary disease and fatty degeneration. If a systolic mitral murmur prove to be somewhat indefinite and affected by posture, cubitus and effort, to vary under observation from day to day, and to disappear under treatment, it is of no more value to us in differential diagnosis than that it signifies relaxation and weakness, or disorderly action, of the left ventricle, consequent on any one of the recognised causes of failure or disturbance of the heart, including the different cardiac poisons, overwork, anæmia, acute disease, poverty and the like, and this whether in a heart previously sound or previously enlarged or previously the seat of valvular disease. An accentuated ringing second sound in the aortic area, or more extensively, is of great value in the diagnosis of arterial tension and of aortic atheroma or of both, but it is associated with far too many different causes to be of much use in differential diagnosis. It should suggest a most careful search for Bright's disease. Slight reduplication of the first sound is common over the heart strained in youth and the heart degenerated by alcoholism and metabolic disorders, but

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everyone knows that it is not unusual in a variety of other conditions, healthy and morbid. On the other hand, the *bruit de galop*, or cantering rhythm of cardiac sounds—definite doubling of the first sound followed by loud, accentuated, ringing second sound—is practically pathognomonic of Bright's disease, and is one of the most valuable, because one of the most ominous, of physical signs in connection with the cardio-vascular system. A normally-sized heart with irregularity, increased frequency, and a variable systolic murmur in the mitral area, is characteristic of tobacco poisoning. A heart enlarged on both sides, and acting irregularly without murmur, is (apart from cardiac failure) suggestive of strain in early life.

Cardiac symptoms taken individually are of less diagnostic value than signs. No symptom is pathognomonic. Palpitation is a nearly universal phenomenon of cardiac disease and disorder. Faintness and actual faints are not uncommon in cases of early cardiac strain, gouty heart, and nervous disturbances. Angina we meet with, you will remember, in regular and irregular gout, tobacco heart, strain (especially strain after 40), and in syphilis and alcoholism, whilst pseudo-angina is extremely common in nervous women: thus angina is of less diagnostic value than might have been expected. A high-tension pulse I have found most often in Bright's disease, in juvenile strain, and in cardio-vascular affections of nervous origin; a low tension pulse in connection with alcoholic and tobacco poisoning, and with senile strain.

When we review these facts, I think we are entitled to conclude that the physical signs and symptoms carefully determined by clinical investigation may be confidently employed, along with the patient's previous personal history, and the history of his present illness, to differentiate from each other the causes of cardio-vascular degeneration in individual cases. And, further, that they inform us of the seat of at least some of the lesions, valvular, parietal and vascular. A little trouble, patience and attentive observation are all that are required to reach a complete or working diagnosis. Now we may approach the great practical subjects of prognosis and treatment with some confidence.

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Prognosis.

Beginning with the simplest kind of cardio-vascular disorder, let us see what the prognosis is in tobacco heart. You will have gathered from what I had to say on this subject in my last lecture, and indeed you know as men of observation and experience, that it is comparatively favourable. All the cases I have had an opportunity to watch did well, provided the cause of their distress was avoided and the heart and vessels were otherwise healthy. Further, improvement begins early, and it may be rapid and recovery complete; but you will remember that one patient, whose case I detailed to you, continued to have alarming angina for six months after giving up tobacco. Recurrence attends resumption of the habit, but some of its votaries contrive to continue to smoke just short of inducing serious discomfort. Unless a successful effort at reform be made, cardiac trouble may continue indefinitely. But even then I cannot say that I have seen serious damage done by tobacco alone in sound hearts, nor arterial sclerosis, as has been stated by some authorities.

An entirely different and most unfavourable estimate is to be formed of the prospect of life in the alcoholic heart. Naturally, a certain proportion of cases recover if the disease be of recent development, the condition uncomplicated, and treatment faithfully carried out. Unfortunately, as a rule, we have to deal with alcoholism in which all these conditions of success are wanting. The habit is established, other organs besides the heart are involved, other diseases than alcoholism are present, and the patient has neither the inclination nor the power to follow our advice. Cirrhosis, neuritis, dementia complicate the cardiac degeneration, or, more correctly, it complicates one or all of these. Chronic Bright's disease is made to account for a number of deaths in the mortality returns that strictly belong to alcoholism. Occasionally the end comes suddenly from fatty degeneration, or in the course of some acute disease; otherwise, as we have seen, by slow cardiac failure and dropsy.

Prognosis in gouty heart, including the heart of the man with goutiness, glycosuria and other irregular forms of the disease, is a subject of considerable practical difficulty. In my last lecture I read to you a short account of the case of a friend of my own who had had occasional attacks of gouty angina for 40 years.

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And certainly a large proportion of the old ladies of 60 or 70, whom you all have had as patients for years on end with weak heart and systolic murmur in the aortic area, owe their disablement to gout, if my observations are correct. The lesion proper of the aorta and aortic valves in these cases is atheroma, but the damage is accompanied with repair in the form of sclerosis, which, by increasing the loudness of the bruit, adds unreasonably to our anxiety about the case. Equally certain it is that patients belonging to this class improve under treatment. Still, the condition of arrest cannot go on indefinitely. In addition to extrinsic dangers, particularly those of Bright's disease, cerebral thrombosis and hæmorrhage, and bronchitis, failure of the heart is liable to supervene and prove fatal from the gravest of all intrinsic causes, namely, coronary degeneration. As this increases, the myocardium is steadily more and more impoverished; its contractile vigour declines, and residual dilatation of the chambers sets in with mechanical congestion of the viscera. Complaints of "the heart" increase, the breathing becomes oppressed, the face assumes more and more the characteristic "cardiac" appearance, and dropsy creeps up the lower limbs. Even then the prognosis is not hopeless, for undoubtedly a certain proportion of cases of dropsy in old persons with degenerated heart and vessels are still amenable to rational treatment. But the case has occasionally a more dramatic termination. As I was able to illustrate after my second lecture by a specimen from the Museum of Charing Cross Hospital, a branch of one of the coronary arteries that has been narrowed by atheroma for an indefinite length of time, with consequent cardiac weakness and discomfort, may any moment become thrombosed rapidly, apparently in consequence of some passing depression or other unfavourable influence, just as in thrombosis of degenerated cerebral vessels. Fatal angina is the result. This is a point of great practical importance—that sudden death will occur in old gouty subjects not from the lesion of which a basic or an apical systolic murmur is the evidence and which causes us concern, but from associated coronary atheroma, which we probably never suspect; indeed, that it may occur in those subjects with no murmur whatsoever to attract our attention and excite our fears.

Still more unfavourable must be the forecast in syphilitic lesions of the heart and vessels. Of 18 of my cases in which the result was known, only one-half improved under treatment, and 20 per

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cent. of them died within a few years (some indeed within a few weeks) of the discovery of their disease. Cardiac failure accounts for most of the deaths, whether developed gradually with dropsy, which proves to be intractable; or progressing rapidly with great cardiac distress, including angina; or occurring suddenly, as it often does. Aneurysm makes its appearance in other instances, of which the patient dies, or he is carried off by general paralysis or Bright's disease.

What prospect have we to hold out to the man who has strained the walls of his heart by muscular effort? I believe that one can speak with some confidence on this subject. The middle-aged patient who over-stretched his cardiac walls as a youth may be comforted with the opinion that the condition is not a fatal one. The average duration of 11 cases of this order I found to have been 30 years when they came under my observation; the minimum duration was nine years, the maximum 50 years. This last case deserves particular mention. The patient was first seen by me for failure of the heart with cardiac dropsy, consequent on fresh breakdown after exertion during a holiday; and it is most encouraging to observe that compensation was restored by treatment, and that now, 12 months after that event, he is not only alive, but able to carry on light professional work. This case also illustrates what I have told you respecting the course of the affection, and the prospect before the patients, in long-standing strain—that there is continual liability to fresh embarrassment of the heart during exertion, in which they appear to have a lasting inclination to indulge. If they happen to follow an occupation that entails occasional effort, or effort with excitement and worry (if they happen, let us say, to be busy practitioners of medicine), they suffer in the same way from attacks of tachycardia, distressing palpitation and anxiety. Indeed, as I pointed out in my second lecture, they are readily upset by other influences besides these, including indigestion, to which the victim of hurry and worry is peculiarly liable; and they must be prepared to have to lead a life of comparative temperance and self-denial.

Neither is strain of the heart for the first time after 40 by any means so grave as might be expected. Of course, sudden muscular effort occasionally accounts for sudden death in old men. But it is astonishing how, under such circumstances, quite old persons do recover from conditions of extreme distress lasting acutely for half

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an hour—for instance, after running with a heavy bag to catch a train. The majority of my patients described their condition as improved after a time, but others relapsed; and on the whole the correct prognosis is that they must expect to remain variously disabled—that is, liable to præcordial distress and dyspnœa on more than moderate exertion, or when subjected to circumstances of other kinds that tax the heart.

Cardio-vascular disorder and disease referable to nervous strain pure and simple is amenable to treatment by complete and prolonged rest or relaxation in the majority of instances. Still, death may occur from sudden cardiac failure; or should advice be neglected or soon forgotten, as happens so frequently in these subjects, the attendant high arterial tension and vascular degeneration too often end in cerebral lesions, with or without Bright's disease. Of chronic Bright's disease itself and the associated cardio-vascular changes in their prognostic aspects I need not speak, except to say that along with syphilis it is by far the most hopeless of all these affections.

In attempting to forecast the life of a man who is the subject of cardio-vascular degeneration in middle or advanced life, we must not forget the possibility of the intercurrence of acute disease. Here is a large subject for us as practical men—one far too large and important for discussion here: the effect, for instance, of the existence of enlargement of the heart and an irregular and thickened pulse on the prognosis of influenza, or, let us say, on the chances of a successful issue after operation. Very naturally, unsound vessels and a murmur over the præcordia weigh heavily against the prospect of recovery from pneumonia, for example; and yet how often do we not find a patient of 70 with one or both of these disturbing conditions come safely through such an illness! Here, again, I believe it is in great measure the true nature of the old-standing disease, not the physical signs such as irregularity of pulse or mitral bruit, that ought to be taken into account. A heart enlarged and a radial artery thickened by prolonged activity and nothing else will suffice to carry a man safely through an attack of influenzal pneumonia; but what chance is there for the chronic alcoholic under similar circumstances, or for the subject of chronic Bright's disease?

So much for the general prognosis in each of these kinds of cardio-vascular disorder and disease. But it is the particular prognosis that we have to attempt to estimate—that is, the

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prognosis in the individual patient as he comes before us and asks us that trying question, "What is my prospect of life and health"? We diagnose, if possible, the precise nature of his cardiac affection, and apply to the best of our ability the conclusions which I have just submitted to you, and at the same time we estimate as correctly as possible the man's personal condition, character and disposition. For, whatever may be determined with respect to the average patient by an analysis of a large number of these cases, the individual patient's future in disease of the heart of every kind, degenerations included, greatly depends on the care that he takes of himself. This introduces us to another consideration. However earnestly we may attempt to estimate the prognosis on a strictly rational system—that is, by basing it on an accurate and complete diagnosis—we cannot deny that when the individual patient is before us we are influenced directly by certain of the symptoms and signs, without asking ourselves what their respective pathological meaning may be. True bradycardia, the story of an unmistakable attack of angina pectoris, a loud aortic diastolic murmur, the *bruit de galop*—these instantly give us great concern before we have had time to translate them into the language of morbid anatomy. Very naturally we attempt to carry this method too far, and to reach a prognosis, as it were, by a short cut, by attaching a prognostic value to each clinical phenomenon—palpitation, præcordial oppression, faintness, lethal sensations, and so on. Now, quite irrespective of the unscientific character of this proceeding, it is of little practical service. Even when we have listened to an account from a middle-aged man of an attack of angina pectoris, what can we tell him of his prospect of life until we have learned whether he be guilty of excessive smoking or drinking, whether he be gouty, whether he have lately strained his heart or no? What I do regard as really valuable prognostically, in the way of a simple clinical observation, is the determination of progressive symptoms and signs. A man of 72 complains of oppression over the lower sternal region as often as he climbs a hill. Twelve months later he comes and tells us that he has had an attack of severe pain across the top of the chest during the night. Another year passes, and he returns to say that now he cannot hasten on the street without præcordial distress; and it is noted that the second aortic sound, previously thick in character, is slightly blowing. By the fourth year of observation the patient, having had influenza in the interval, complains of an

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auto-audible murmur, and of actual pain in the chest; there is now a fully-developed aortic diastolic murmur, and his ankles swell occasionally. Prognosis was only too easy in this case, without inquiry into either the cause or the lesion. A few months later true angina occurred, and very shortly the patient died, after twenty-four hours' severe suffering.

Treatment.

Not the least advantage of the etiological standpoint of our survey of the disorders and diseases of the heart and arteries in middle and advanced life is the rational as well as hopeful line of treatment which it enables us to pursue. On the whole, we can control morbific influences more easily than we can alter pathological processes; and (what is of equal or even greater importance) a knowledge of the causes of disease often enables us to prevent what we could not possibly cure. For all that, the etiology of heart disease furnishes us with but one set of many invaluable indications for treatment. We must have also a clear mental picture of the pathological anatomy of the conditions we would attempt to modify —for instance, of the damage wrought by gout on the mitral valves and aortic arch, by syphilis on the coronary arteries, by strain on the walls of the different cardiac chambers. No less necessary is it for the practitioner to take into account, before proceeding to prescribe, the clinical characters and course of the case in hand. As I have said more than once already, a large proportion of the distress, disabilities and dangers attending degeneration of the heart are due to some additional or extrinsic disturbance—distension of the stomach, constipation, worry or exertion—which alone, not the pathological condition, calls for therapeutical attention.

It appears, then, that the whole natural history of the diseases and disorders of the heart—and, I might add, of every individual case—has to be studied, and the value of its different parts absolutely and relatively estimated, before rational treatment can be ordered. How different will treatment be, if ordered on these principles, from the routine procedure of prescribing a little strychnine and digitalis for a man with oppression on exertion and a systolic bruit at the base of his heart!

Let us begin this part of our subject with a brief consideration of preventive treatment, founded on a knowledge of the cause at work.

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Now, the first thing to strike us about these unfavourable influences is the number of them that could be avoided or controlled successfully by simple exercise of the will. The toxic effects of tobacco, alcohol, tea, &c. are due to abuse, from thoughtlessness or ignorance, or from indisposition rather than inability to exercise self-control. The abuse of tobacco appears to create so much discomfort or even alarm, of a kind which the sufferer cannot fail to refer to its cause, that the remedy is effected automatically, and no great harm is done. We seldom have to do more than confirm the patient's suspicions in this direction, and recommend temporary abstinence from the cigarette or pipe and greater care in the future. With alcohol it is a different matter. Alcoholism grows by what it feeds on, and our best efforts are often vain. The present is hardly an occasion for dwelling on this subject—the duty of the profession to their patients and friends in respect of the abuse of alcohol. Still, I should not feel that I had discharged to the best of my ability, or in full conformity with my strong convictions, the duties of the honourable position which by your favour I occupy as Lettsomian Lecturer, if I did not urge you to exercise more fully than is at present exercised your personal influence to discourage habitual drinking. I believe (because I have found) that many men who are not open to arguments of an abstract kind, can be made to pause and reconsider their manner of living by having a concrete presentment of their condition and its results placed before them—in plain English, by being thoroughly frightened. "Heart disease" is a powerful argument to employ with persons of this class, and it is one that is also justified by the issues at stake. Of syphilis and the havoc that it works on heart, aorta and the vascular system generally, but particularly within the nervous system, I need not speak. The profession, as I have said, is not yet sufficiently alive to it: what can the public be expected to do in the way of prevention? Gout, corpulence and allied metabolic disorders, those fruitful sources of cardio-vascular disorders and atheroma, call for temperance not only in drinking but in eating. Whilst the question continues to be discussed which particular articles of food ought to be avoided by gouty individuals, let us all join in offering them one bit of advice of the value of which there can be no doubt: whatever they eat, to eat little. Moderation in amount is, speaking broadly, far more important than avoidance of the theoretical antecedents of uric acid, whether meat, or milk,

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or sugar. Let me quote what Dr. George Balfour, who has written so much and so well on disease of the heart and its treatment, says on this subject:—"I know of no society that inculcates, by precept or example, temperance in regard to food; yet there is nothing ages a man or a woman so rapidly, there is nothing that shortens life so certainly, and there is nothing that embitters the latter days of life so much as over-indulgence in food. To those who can afford thus to transgress—to the well-to-do—excess in food is a much more serious menace to health and life than excess in drink, and it is specially so in respect of senile affections of the heart, some of which have been distinctly recognised to owe their origin to over-indulgence, while all are distinctly aggravated by it."* With the observance of this simple and wholesome dietetic rule must go attention to free elimination by all the excretory channels, and the insurance of sufficient exercise and enjoyment of fresh air. If we wish to impress this consideration on our own minds and give effect to it in our practice, let us call to mind for a moment the number of cases that I have submitted to you of atheroma of the aorta in stout matronly women of sedentary and luxurious habits, in whom, indeed, this degeneration is quite as common as in men.

I have already said so much on the subject of cardiac strain that it is unnecessary and would be uninteresting to return to the question of the prevention of it. We have seen how often it occurs in the middle-aged or old subject by ill-considered attempts at athleticism. Moderation and due respect for age are the true guides to the useful enjoyment of exercise after 40. As for the evil effects of nervous influences on the circulation, in addition to anxiety, care, misfortune and grief, which are usually beyond our control, nervous strain, as distinguished from simple hard intellectual work, often must be relaxed if cardio-vascular damage is to be prevented. I refer to the cases of persons in positions of great responsibility with heavy complex prolonged duties, which they fail to overtake without exhaustion consequent on high pressure and excitement.

I would not have dwelt so long upon the measures calculated to prevent degeneration of the heart, were it not that they have to be employed with equal strictness and perseverance in the treatment of

* G. W. Balfour, 'The Senile Heart,' p. 236, 1894.

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cardio-vascular disease when it is already established and our assistance is sought with anxiety. The etiological indications have still to be respected faithfully; on this I need not dwell. The next question is:—What can be done for the pathological changes wrought on the arteries and the valves and walls of the heart? In syphilitic lesions we do not hesitate to say that potassium iodide should be given freely: it is a specific remedy of great value. Can the atheromatous process be influenced with equal or with any success? It depends on toxæmia and anæmia; the obvious indication is to purify and enrich the blood. This, at least in respect of gout, glycosuria and corpulence, as we have just seen, must be effected by a thorough reform in every department of personal hygiene. Arsenic and moderate doses of iodides, combined with an excess of alkalis, are calculated to promote the same end. Dr. Mott has shown that atheroma, whether of valves or of vessels, can be traced in many instances to disease of the *vasa cordis* and *vasa vasorum*. This carries us a step forward in our quest for indications, but the practical conclusion remains—that the healthy nutrition of the smaller arteries has to be restored by attention to the blood and the use of specific remedies.

So much for valvular and vascular lesions. There remains to be discussed the fulfilment of the greater indication for treatment: the one which directs and governs the employment of the most important and successful of all the measures comprised in cardiac therapeutics. This is the establishment and maintenance of compensation. The nutrition and activity of the myocardium can be increased and sustained by means of specific cardiac stimulants and tonics, such as strychnine, ammonia and the digitalis group of drugs; by hæmatinics, stomachics and laxatives to afford an abundant supply of healthy blood; by insuring wholesome nervous influences, one of the conditions of hypertrophy; and by the employment of the non-medicinal measures now so extensively used to increase the vigour and benefit the metabolism of the cardiac walls, particularly active and passive exercises and baths. This is a comprehensive statement of the lines of treatment calculated to benefit more or less all the kinds of cardiac degeneration which I have had occasion to notice. Of the individual pathological changes, and the rational treatment indicated for each from this point of view, I will refer to three only which will serve to illustrate the considerations which ought to guide us in practice.

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In the subject of regular or irregular gout attention to the cause, that is, to disordered metabolism of the body as a whole and of the cardiac and arterial walls in particular, promotes, as we have seen, the recognised conditions of compensation: the etiological and pathological indications are here practically identical. In respect of exercise in detail, gentle walking on the level should be ordered to begin with, that is, exercise short of producing pain or oppression. The patient had better give up his regular work for a time, and take advantage as fully as possible of the leisure to enjoy the benefits of a healthy life in the fresh open air. Very shortly he will be able to ride, play golf, shoot and cycle slowly. A course of treatment at one of the best of our native spas or of the Continental watering-places sometimes makes a new man of the sufferer from gouty heart. The Nauheim treatment, whether taken there or in England, may also do real good. But it must not be employed indiscriminately, as is so often done. The profession ought to remember (what the public cannot and probably never will come to understand) that pathological diagnosis must precede rational treatment, which consists in applying a proper remedy to the individual case before us, not in fitting every case to a specialised system or panacea—the essence of quackery.

In planning the treatment of the dilated heart of the middle-aged man who strained his circulation in youth and comes to us complaining of a recurrence of præcordial distress and breathlessness, we have to remember that there is left in the cardiac walls but a portion of that reserve of elasticity and that reserve of muscular energy which they normally possess and require to enable them to meet the stress of exertion. Let me remind you for a moment that, of the provisions which the heart possesses against such an emergency or other sudden or severe demand upon its capacity and activity, one is extensibility of its tissues, by virtue of which it accommodates within it the considerable increase in the charge of blood that is poured into it from the active muscles, and the residues that accumulate within it from insufficient discharge in the face of increased peripheral resistance. The walls yield before the increased internal pressure acting on them both *a tergo* and *a fronte*; the heart is overdistended, with a passing sense of discomfort, dyspnœa and lividity; and when the muscular effort is ended the elasticity corresponding with extensibility of the walls presently insures the return of the chambers to their original dimensions. At the same time a second

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provision comes into operation. Increased muscular activity is developed in accurate proportion to the rise of internal pressure and secures sufficient output from the heart. This, I repeat, is what occurs in the sound heart. Now, in old parietal strain extensibility and the reserve of capacity of the chambers which it insures are seriously exhausted; whilst the muscular function is only maintained by means of hypertrophy, to which there is necessarily a limit. In these cases of strain it is impossible to reduce the original dilatation —that is permanent. But we may and ought to be able to reduce the further dilatation, if any, that has been produced in connection with recent failure of nutrition and fresh embarrassment. Therefore, whilst we promote the nutrition of the elastic and muscular structures of the myocardium on the general principles which I have just laid down, we must be distinctly sparing of our demands on them. Everything approaching effort must be forbidden at once and for a sufficient time to rest and reinvigorate the cardiac tissues; whilst the nitrites or small doses of opium will also give relief and restore confidence in attacks of palpitation and anxiety. "Exercise, but not exertion," will be the broad rule to follow, at any rate until it has been proved that greater effort can be made with safety and actual advantage. But if præcordial embarrassment be the result of the attempt, or of ordinary professional work, as occasionally happens, further rest will have to be taken, that is, rest for hours or days, according to the severity of the symptoms. I have already mentioned to you that middle-aged patients with cardiac strain, dating from their youth, occasionally break down in their work for months or even years. In such an event a thorough change of air and scene should be combined with rest as a method of treatment. A long voyage may prove invaluable, or foreign travel of an easy and interesting kind. These not only rest the heart, but they divert the mind and remove the curious nervousness or loss of courage which, as I have said, is developed occasionally in these subjects, previously so vigorous and confident.

Compare with this line of treatment that which is indicated in acute cardiac strain after 40. The problem here is not how to deal with a chronically dilated and hypertrophied heart, but with a heart which has just yielded during effort, mainly in consequence of the nutritional impairment of its walls. It is not simply strain of a heart that had begun to be somewhat precariously nourished as a natural result of age; the probability is that the heart was actually

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gouty in the comprehensive sense of the term, that is, irritated by uric acid and embarrassed by flatulence, both mechanically and reflexly; and, indeed, possibly it was damaged by the atheromatous process. Rest is essential at first in the treatment of this type of case also; indeed, it is automatically secured by the distress which accompanies attempts at movement. But rest must not be carried too far, that is, it must not be of greater degree or duration than is absolutely necessary as indicated by the symptoms and signs, lest it aggravate the state of parietal mal-nutrition and promote fresh gout. At the same time the diet must be controlled strictly or even severely on the lines that I laid down for gout, lest the over-feeding which accompanies rest as a matter of thoughtless routine should have the same unfortunate effects. A course of treatment at some of the good home or Continental spas, with special precautions, is distinctly useful in senile strain, and the Nauheim methods have benefited more than one case of the kind in my experience, the degree of dilatation diminishing whilst the vigour of the heart increased. At the same time cardiac tonics of a medicinal kind are administered judiciously.

I am on the point of passing from the subject of the nutrition of the myocardium, when it occurs to me that some of you might very naturally ask me: What about fatty degeneration and the treatment of it? This is a question peculiarly interesting to me. I have not dwelt on fatty degeneration of the heart in these lectures, and yet I have mentioned it again and again. I have said that it is a result of alcoholism, of gouty atheroma of the coronaries, of syphilitic arteritis in the same area, of Bright's disease, of profound anæmia and of phosphorus poisoning; and that I believe it may result from severe nervous strain of a harassing and depressing character; and that in connection with each of these causes it has to be regarded and treated differently. Nothing could well bring home more fully to us the importance, indeed the necessity, of pursuing in practice the line of inquiry, prognosis and treatment which I have advocated in these lectures—the etiological one. Let me ask you also to listen to a confession of one of the highest authorities on heart disease in this country. "It is absolutely impossible," says Dr. George Balfour, "to diagnosticate fatty degeneration of the heart; we may surmise its existence, but we can only be certain of its presence when we see it *post mortem*"; and he quotes Fraentzel of Berlin in support of his

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statement.* It must have occurred to many of you, as it has occurred to me, how seldom we diagnose fatty degeneration of the heart until after sudden death. How can we be expected to do so if we trust only to signs and symptoms, and overlook that which is the key to the diagnosis—the discovery of the cause that is at work?

I have now sketched very broadly the rational treatment of these disorders and diseases as far as the object of it is to prevent the occurrence or the extension of them, and to promote compensation of the disabilities which they produce. It remains for me to notice, also very briefly, the management of cardio-vascular degenerations when the heart fails, or when it appears to fail, and distress and danger demand more direct and immediate attention. I have said "when the heart appears to fail" of set purpose. I am anxious to direct your attention, if it be but for a moment, to the fact that in many instances where præcordial oppression, pain, palpitation and faintness, with frequent small irregular pulse, are significant of serious disturbance of the action of the heart, there is no failure of the myocardium in the proper sense of the term, but only embarrassment of a temporary character. Do not conclude from this that I regard the disturbance of the heart as of little account. I have called it serious, for indeed the patient may perish of it. What I wish to maintain is that in cardiac degeneration of any kind, in chronic cardiac dilatation, and in the enlarged heart of Bright's disease and of emphysema, just as in ordinary valvular disease, attacks of distress, alarming both to patient and doctor, often occur which call for nothing more in the way of treatment than attention to some intercurrent influence—an indigestible meal, loaded bowels, a nervous shock, a thoughtless effort, a passing hardship or nervous strain. Digitalis and its allies, strychnine, alcohol, nitrites, iodides and the rest are out of place in such an event. Complete rest in bed, a carminative draught, calomel and saline purgatives, spare and highly digestible diet, reassurance and a little time are quite sufficient means of treatment.

When true failure occurs, manifested by the familiar phenomena of residual dilatation of the heart, mechanical congestion and dropsy, a different set of measures are demanded. Now is the time to attend with expedition, energy and completeness to the fulfilment

* Balfour, *op. cit.*, p. 249.

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of the three great therapeutical indications for the treatment of cardiac failure: to reduce the peripheral resistance; to increase the vigour of ventricular contraction and rehabilitate hypertrophy; and to remove arrears of work in the form of residual blood in the cardiac chambers, mechanical congestion of the veins and viscera, and dropsy of the integuments and serous sacs. Bodily rest; a light, solid diet, and a definite allowance of alcohol, if required; active purgation with mercurials, salines and jalap; and the exhibition of sufficiently large doses of digitalis or one of its congeners, in combination with saline and other diuretics—these are the means calculated to attain the desired objects. You will not expect me to enter into the many details of the management of cardiac failure. It is not different in any important respect in the man of middle or advanced age with cardiac degeneration from what it is in an ordinary case of chronic valvular disease. Only on a few points do I desire to dwell. First, that we must not be afraid to purge these patients, if necessary, every morning. Secondly, that when the appetite flags and flatulence occurs, instead of slops a blue pill or a dose of calomel should be given, and light solids persevered with. Third, that digitalis must be given freely, the dose of the tincture, for instance, being raised to 15 or even 20 minims every four hours, if smaller doses, such as 7½ or 10 minims, fail. Unquestionably there is a disposition on the part of some practitioners to pause or retrace their steps in the dosage of this invaluable drug, alarmed by the irregularity, frequency and smallness of the pulse. All these characters of the pulse call for more digitalis, not for less. In this connection let me also say that the most ready and accurate, because measurable, evidence of the action of digitalis in cardiac failure is strangely disregarded in ordinary practice—I mean the volume of the renal secretion. We may be in difficulty, and we may differ with each other, as to the tension of the patient's pulse and the use of continuing or modifying the digitalis treatment, when all that we have to do is to ascertain the exact degree of diuresis. Fourth, that nocturnal restlessness and sleeplessness are to be met unhesitatingly with permission to spend the night in an easy chair by the bedside. Fifth, that, according to my experience, acupuncture and drainage succeed perfectly in these senile cases with dropsy, as much as 10 pints or more of serum escaping in the course of 24 hours, to the complete and often lasting relief of the circulation.

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And now I must bring these lectures to a close. In doing so I feel that I have not only to thank you, Sir, and the Fellows of the Medical Society and our visitors for the favour with which I have been received and the patience with which you have listened to me, but at the same time to apologise for the many defects, both in matter and in form, of what I have presented to you. It is a fortunate circumstance for me that, whilst the subject was so large and so difficult, the mode of treatment of it commonly associated with the Lettsomian Lectures and your kind forbearance have enabled me to conceal my shortcomings by free selection of less severely scientific topics, and the employment of an easy style. At the same time, may I claim a little of your favourable consideration for the aspect in which I have regarded the disorders and diseases of the heart and arteries in middle and advanced life? I should be satisfied with the results of my efforts on this occasion, whatever may be thought of their form, if I have succeeded in convincing you of the practical advantage of regarding these complaints from the side of their causes as well as of their pathological anatomy.

March 25th, 1901.

TWO CASES OF ABDOMINAL INJURY WITH RUPTURE OF VISCERA.

By THOMAS H. KELLOCK, F.R.C.S. Eng.

ALTHOUGH I cannot claim for the two cases whose notes I am about to read anything very exceptional in character or original in the treatment, they illustrate, I think, in a fairly typical manner some of the injuries that may be inflicted on the abdominal viscera by direct violence without any external wound. I have added to them short notes of a third case which recently came under my care, in which the injuries were more extensive, and probably necessarily fatal, although their full extent was only recognised when the abdomen had been opened with a view of arresting the hæmorrhage.

The first case was one of ruptured spleen. The patient was a man 40 years of age, a baker by occupation, and apparently a quite healthy man. He was knocked down and run over by an empty

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hansom cab, which was only travelling slowly; he was in a somewhat doubled-up position when the wheel passed over him, but it was said to have gone across his abdomen from right to left, and slightly obliquely upwards. On admission to the hospital, about half an hour after the accident, he was conscious, but very collapsed, cold, the skin and mucous membranes blanched; respirations quick and short, pulse small and rapid, temperature 96°. He lay on his back, with the right leg drawn up; the left he would not move much, on account of an injury to the knee. He complained of great pain in the back and abdomen, but did not refer the latter to any particular region; the pain was aggravated by any attempts to take a deep breath. The abdomen showed no mark of injury externally; the walls were contracted, and moved very little with respiration; there was tenderness all over, especially in the left hypochondrium; on percussion, the liver dulness was present; the area of splenic dulness was thought to be increased downwards; there was no other evidence of free fluid in the peritoneal cavity. The other injuries that were detected were a fracture of the ninth rib on the right side, synovitis of the left knee, and an abrasion on the left elbow. There was no evidence of fluid in the pleuræ; a catheter was passed, and the urine that was drawn off found to be normal. The patient was anæsthetised, and, having the assistance of Mr. John Murray, I opened the abdomen by a 4-inch incision in the left linea semilunaris, extending from an inch below the costal margin downwards. A little hæmorrhage was found in the muscles of the abdominal wall, and on opening the peritoneum dark-coloured blood escaped; the hand was immediately passed to the situation of the spleen, and in doing so a considerable quantity of clot and fluid blood was liberated. The spleen was felt to be extensively lacerated. To gain a little more room a short transverse incision was added to the longitudinal one. On attempting then to bring the damaged organ forwards profuse hæmorrhage took place; this was controlled by seizing the pedicle between two fingers, and whilst it was so held it was transfixed and ligatured with silk, the ligature round the upper half being tied again round the whole pedicle. The spleen was then removed with scissors, the section of the vessels being close to the hilum, and all hæmorrhage was found to have been arrested. On examining the situation from which the spleen had been removed, a separated piece was found attached to the parietes; a ligature was tied above it, and this also removed. The abdominal

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cavity was sponged fairly clean of blood and clot, and as there was no further hæmorrhage the abdominal wound was closed and dressed. The patient bore the operation very well; both his pulse and colour were better at the termination than at the commencement. On examining the spleen after removal it was found to be extensively lacerated in several directions, some of the rents going almost completely through it; the separate piece had been completely torn away from the rest of the organ.

During the evening following the operation the patient complained much of thirst, and of pain in the abdomen and back; but his general condition had improved, and he was much warmer. A small quantity of morphia was given hypodermically, and 4-ounce injections of saline solution introduced into the rectum. He slept a little after the morphia, and was not sick during the night; but the following morning he again complained of the pain, and the abdomen was found to be somewhat distended, and this increased a little during the day; he vomited once, and was fed by the rectum only. A simple enema brought away no fæces or flatus; the pulse was 146 and weak, the temperature subnormal. On the following morning he seemed rather better, but later in the day the vomiting recurred, the smell of the vomit being rather offensive. An enema of castor oil and turpentine had no effect, and from this time he became steadily worse; the abdominal distension increased, the vomiting became more troublesome, and the vomit more offensive, the pulse remaining rapid and weak, the extremities cold. The stomach was washed out, and small injections of strychnine given at intervals of two hours, but without appreciable benefit. Death occurred on the morning of the fifth day.

I am indebted to Dr. Campbell Thomson for the following account of the condition found at the *post-mortem* examination:—There was a small quantity of blood free in the peritoneal cavity; the intestines were much distended above a spot a few inches above the cæcum; the small intestine below this point and all the large intestine were quite collapsed. Corresponding to the part where the dilatation ceased the intestine was of a bluish colour externally and congested internally, having apparently been bruised. There were two or three other small areas of the small intestine which showed somewhat similar though slighter signs of bruising. The distended intestines were filled with liquid fæces. There were some extravasations of blood into the peritoneum and mesentery, especially in the right

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flank; the small omentum was torn slightly, and blood extravasated in its substance. There were three irregular extravasations of blood near the upper surface of the right lobe of the liver, showing on its surface as dark purple patches. The spleen had been removed, two small pieces left, and round the base of one of them was a ligature firmly fixed. Both kidneys were pale; there was a slight superficial bruising of the right. The ninth right and tenth left ribs were broken about an inch from the spinal attachment, and some blood extravasated in the neighbourhood. The lungs were both deeply congested. All the other organs were practically normal.

The second case was one of ruptured kidney. The patient was a man aged 32, a railway carriage cleaner, who whilst following his occupation fell from the top of a carriage, a distance of about 15 feet, on to the edge of a board, which he struck with the left side of his back; he did not lose consciousness, but complained of great pain in the left loin. He was admitted to the Middlesex Hospital five hours after the accident; he was then collapsed and cold, the skin and mucous membranes somewhat blanched. Complaint was made of much pain in the abdomen and left loin, and of a constant desire to defæcate, but his efforts to do so were ineffectual. He stated that since the accident he had passed a quantity of blood by the urethra, and the urine he passed soon after his admission contained a very large quantity of bright blood. His pulse was 84, of fair volume, temperature 98·2°. On examining the abdomen the muscles of the left side were found to be strongly contracted, so that no definite opinion as to whether there was any swelling could be given; this side was also less resonant than normal, but there was no good evidence of free fluid in the peritoneal cavity. He was very tender all over the front of the abdomen and in the left loin, but there was no external mark of injury; the abdomen did not move well with respiration, the liver dulness was present. The rectum was found to be full of fæcal matter; no blood came away on examination. He was constantly asking to be allowed to go to the lavatory on account of the desire to defæcate. An anæsthetic having been given, as soon as the rigidity of the muscular wall had relaxed a large tumour could be felt in the region of the left kidney. The abdomen was opened by a 4-inch incision in the left linea semilunaris; no blood, gas, or fæcal matter was found in the peritoneal cavity. On pushing aside the omentum a large, very dark coloured tumour was found behind the descending

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colon, pushing this forwards and reaching to within an inch of the anterior abdominal wall. No evidence of intestinal injury being found, and it having been ascertained that the right kidney was present, the abdominal wound was closed and dressed with gauze and collodion. The patient was then turned on his right side with a pillow under him and the usual lumbar incision made over the left kidney. On opening the peri-renal tissue a large quantity of dark blood clot was found, and on removing this, rather free hæmorrhage occurred; the kidney was examined and found to be extensively lacerated, the lower third of the organ being loose and completely separated from the upper two-thirds, to which the vessels and ureter were still attached; these were ligatured and the remains of the kidney removed. The hæmorrhage having been found to have ceased, the cavity was cleansed, a large drainage tube inserted, and the wound closed round it by means of silkworm gut sutures. The after history of the case was uneventful, the anterior wound healed by first intention, there was a little suppuration in the lumbar one, but this very rapidly subsided, and the drainage tube was left out on the tenth day. The blood disappeared at once from the urine, which was normal in character afterwards; 47½ ounces were passed in the 24 hours following the operation, and the average quantity per diem for the first nine days was 39½ ounces, then it increased considerably, and during the next 13 days averaged 64 ounces per diem, sinking again subsequently to the normal. The patient was discharged to go to a convalescent home five weeks after the operation. On examining the kidney it will be seen that in addition to the transverse rent which tore the lower third from the upper two-thirds, and which laid open the pelvis, there is another in the lower third, dividing this into two parts; the vessels and ureter are still attached to the upper portion, and have themselves escaped injury.

The other case I should like to mention was that of a woman 55 years of age, who was knocked down by a hansom cab which was proceeding slowly, one wheel passing over her body just below the ribs. On admission to the hospital she was collapsed and showed signs of severe internal hæmorrhage; there was pain in the region of the spleen and the dulness there was increased, ruptured spleen being diagnosed. The abdomen was opened through the left linea semilunaris by a 4-inch incision; a considerable quantity of blood poured out when the peritoneal cavity was opened. On examining the spleen it was found very much lacerated and

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apparently torn away from the vessels; the organ was removed and the vessels secured with considerable difficulty. The hæmorrhage was found to continue, blood constantly welling up from the situation of the spleen, and on further examination a large laceration of the liver was found, almost completely severing the left lobe; this was bleeding freely, and as the patient's condition became very bad during the operation, we had to be content with plugging the rent in the liver with gauze. Two pints of saline solution were injected into a vein in the arm, but the patient died very soon after being sent back to the ward.

These cases illustrate two points of some importance. In the first place both the patients who suffered from rupture of the spleen were injured by the wheels of vehicles that were proceeding at a moderately slow pace; and secondly they bear out the teaching that injuries to the front of the abdomen are likely to affect organs that are, as it were, loose in the peritoneal cavity, whilst those applied from behind are more likely to injure organs more firmly attached to the parietes. The wheel of a cab passes slowly over the front of a patient's abdomen, and the spleen or spleen and free part of the liver are ruptured, whereas the patient who fell from a height and struck his loin against a resisting structure, sustained laceration of the kidney.

The diagnosis in all these cases was fairly easy; in all there were the symptoms of severe internal hæmorrhage. In the two cases of ruptured spleen the nature and situation of the injury, the pain referred to the region of the spleen, and the increase of dulness there, all pointed to the spleen as the organ injured and the cause of the hæmorrhage; the absence of the ordinary signs of free fluid in the peritoneum does not count for very much, for it is often demonstrated when the abdomen is opened that there may be a considerable quantity of blood, fluid and clotted, extravasated among the coils of intestine without having given any very definite signs on previous examination. In the case of ruptured kidney, the large amount of blood in the urine, with the nature of the injury, were almost conclusive; the only question was whether there were other abdominal injuries associated with it, and the patient's frequent desire and efforts to defæcate made us think that there was possibly some injury to the intestines, and it was for this reason that we opened the abdomen from the front. The desire to defæcate was probably reflex and due to the pressure of the large

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collection of blood on the descending colon. When one has to deal with a fairly obvious case of rupture of one viscus, this question of associated injuries must always be considered. It is unlikely that a violence severe enough to lacerate even such an organ as the spleen would pass over the other contents of the abdomen and leave them uninjured; it would be more likely we should find a single viscus injured when the violence was applied by a direct blow rather than, as in these cases, by a weight passing across the abdomen.

In both the cases of ruptured spleen there were other injuries; in the one the intestines, in the other the liver, were the organs that suffered, and in the former the injury to the intestines was probably the cause of death, more or less acute obstruction came on very quickly, due to paralysis of a part of the small intestine, either from direct injury or from injury to the sympathetic nerves or plexuses, for at the autopsy the distension was found to cease abruptly at the lower part of the small bowel.

With regard to the treatment of these cases, when a diagnosis of ruptured viscus with hæmorrhage has been made, it is obvious that the latter must be dealt with at once, and in the case of the spleen probably the only way of dealing with it is by excision, and there are plenty of cases on record where this has been successfully done for injury or disease, to obviate the necessity of arguing the safety of the operation. The operation is not altogether an easy one, in view of the fact that it has to be done quickly, for opening the abdomen and manipulating the lacerated organ increases the hæmorrhage; in both the cases I have related an incision in the left semilunar line seemed to answer fairly well, and then by having the costal margin held up we were able to get at the pedicle; this was more difficult in the last-mentioned case, as the spleen appeared to be completely torn away from its vessels, and the latter had retracted. The case in which both the spleen and liver were ruptured was, I am afraid, almost hopeless; by the time we had removed the lacerated spleen, found and tied the pedicle, and then found the rent in the liver, the patient's condition was so bad that we could go no further; the transfusion did not help much, as it rather increased the bleeding. Had her condition not been quite so serious it is possible we might have stopped the hæmorrhage from the liver by deep sutures, or even by removing the portion that was almost torn away, and putting some deep sutures through the torn surface of the part that remained. In the case of the ruptured

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kidney it seemed advisable, in view of the possibility of other injuries, to open the abdomen in front for exploration, but having found that the peritoneum and other viscera were uninjured, and that there was another kidney present, I think the plan we adopted of closing the wound completely and dealing with the injury from the loin was preferable to removing the kidney through the front wound; by doing so, any possibility of contaminating the peritoneum with urine that may have been extravasated was avoided, and also intra-peritoneal adhesions, which must occur to some extent if the cavity had been drained from the front. Finding the lower third of the organ torn off and the remainder still attached to the vessels and ureter, the question naturally arose in one's mind whether it would be possible to save the greater part, and arrest the hæmorrhage by deep sutures through the lacerated surface. I think, on the whole, removal was preferable in this case, for the laceration extended into the pelvis, so that not only would a urinary fistula have existed, but the rest of the kidney was probably so bruised that it is doubtful if it would have been of much use if left; moreover, we knew that the patient had another and presumably healthy kidney, so that the loss of the injured one was not a very serious matter.

The PRESIDENT said there were many points in the paper of great interest. The first one was in regard to the patient with the ruptured spleen. It was, of course, a question as to whether the injury to the intestines, to the spleen, or to the sympathetic, which no doubt was involved, was the actual cause of death. Mr. Kellock had also raised the question as to the best method of dealing with ruptured kidney. It was a point requiring consideration whether, after making one incision in front of the abdomen to the linea semilunaris, it was wise to close that wound and make another in the loin, and so approach the kidney from a more advantageous position. Such a proceeding required a great deal of time, but Mr. Kellock had given satisfactory reasons for adopting it. In the case of spleen injury, associated with what was afterwards found to be lacerated liver, it was, of course, almost beyond the power of surgery to save life. Mr. Kellock was to be congratulated on his success in the other case.

Mr. WALLIS said there were one or two points in connection with the cases related by Mr. Kellock which were of extreme interest. A couple of years ago two or three cases were published in 'St. Thomas's Hospital Reports,' by Bernard Pitts and others, with regard to rupture of the spleen. Those cases recovered, and a notable feature in them was that they were surgically dealt with a considerable time after the injury. That was a matter of some importance. The patients appeared to have held on until they were so full of blood that their abdomens were extremely distended. But they got over the shock of the operation, and although from time to time they had repeated hæmorrhages, these

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were not of a sufficiently serious character to necessitate further operation. With regard to Mr. Kellock's successful case of nephrectomy for injury, it was a very interesting one, and there were one or two points upon which he would have liked to have heard more detail. One was, why did he elect to operate in the case? A large number of cases of injury to the kidney, without an external wound, got well without an operation. In this case subsequent events showed that the right course had been adopted, but on what grounds did Mr. Kellock decide to operate? Where there was an external wound the course was clear; the external wound was enlarged, the finger put in, examination made, and a decision arrived at. If operation were considered necessary, the further question arose as to whether it should be done at once or deferred for a short time? If the latter alternative were adopted hæmorrhage might go on for some time, and then possibly suppuration would take place, arising from injury to the colon in the neighbourhood; that suppuration might descend to the bladder, thence up the other ureter, and to the other kidney, with very disastrous results. Two or three years ago, when detailing a case of his own, he published an account of a series of operations, from which it appeared that when the case became septic, it generally took the course described.

Mr. CUTHBERT WALLACE said the symptoms described by Mr. Kellock were practically similar to those in the cases at St. Thomas's Hospital under the care of Mr. Bernard Pitts. Mr. Wallis had stated that those cases at St. Thomas's Hospital were operated on a long time afterwards. He (Mr. Wallace) pointed out that the interval was five days in one, and a few hours in the others. He saw the operations himself, and there was the same difficulty with the pedicle of the spleen. One of the cases being a muscular man, the operation was very difficult indeed. The question of when to operate in abdominal injuries was always of great interest, and although in certain cases of kidney and spleen injury the diagnosis could be made with some certainty, there were others which had to be submitted to operation, because of the general symptoms, without any exact knowledge of what was wrong in the abdomen. He thought one should be guided by the state of the abdomen, the initial rigidity, and the state of the pulse. A pulse of 115 at the end of six hours was a sufficient indication for operation, and still more if it showed a disposition to rise. Mr. Makins had published in the 'Annals of Surgery' (August, 1899) results of the cases of ruptured viscera in St. Thomas's Hospital extending over 10 years, which he would quote. There were 292 cases of abdominal injury of all sorts admitted, including 88 cases of ruptured viscera or mesentery. Of these 35 were ruptured kidney, 21 ruptured intestine, 15 ruptured liver, 10 ruptured spleen, 4 ruptured bladder, 3 ruptured mesentery. Of the cases of ruptured intestine, 16 were of the small intestine and 5 of the great.

Mr. KELLOCK, in reply, said that his reasons for operating on the case were, first, because of the way in which the patient was suffering from the continual loss of blood, and that, too, five hours after the accident; and, secondly, because at the time he thought that there was something more than the injury to the kidney. The constant desire to defæcate and the pain in the front of the abdomen seemed to indicate some injury to the intestine, and they knew how gloomy the outlook was in that condition if it were not treated immediately. With regard to Mr. Wallace's remarks about the boy on whom Mr. Pitts had operated for ruptured spleen, the injury had been caused by a blow from a cricket ball—just such an injury as one would expect to rupture

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a single viscus—and the prognosis, in such a case, would be much better than in one where the injury was caused by a wheel passing over the abdomen.

A CASE OF LATERAL SINUS PYÆMIA AND CEREBELLAR ABSCESS, WITH DEVELOPMENT OF CHEYNE STOKES BREATHING AND CESSATION OF RESPIRATION UNDER ANÆSTHESIA: RECOVERY AFTER TWO OPERATIONS.

By HERBERT F. WATERHOUSE, M.D., C.M. Edin., F.R.C.S. Eng.

THE following case presents so many features of interest in intra-cranial surgery, illustrates so well the difficulty of diagnosis in complex cases, and affords such encouragement to undertake operative procedures in apparently hopeless cases of intra-cranial suppuration and lateral sinus pyæmia, that I have thought it well to bring it under the notice of this Society in a somewhat detailed manner:—

W. H. G. B., aged 30, a dental surgeon, was sent into Charing Cross Hospital under my care by Dr. Vincent Green, of Wimbledon, on April 17th, 1899, with the statement that he was suffering from lateral sinus pyæmia. Mr. B. had a bad tuberculous personal history. At the age of 7 he suffered from tuberculous disease of the right hip, which resulted in the formation of several abscesses and the discharge of several sequestra of bone. In 1889 he fractured the femur of the same side as the result of a fall, and this, together with the disease of the articulation, caused extensive shortening, for which the patient is obliged to wear a very high boot, the sole of which is 8 inches in thickness. Mr. B. had suffered from a purulent discharge from both ears for the greater part of his life. In 1895 Mr. B. came under my care for the first time with a large supra-mastoid abscess on the right side. This abscess, after incision, slowly healed. Four months prior to the patient's admission into Charing Cross Hospital, Dr. Green had aspirated two tuberculous abscesses in the region of the right hip. A few weeks later the pus re-accumulated, and discharging sinuses in the region of the hip were found on Mr. B.'s admission into hospital. For these details, and for the history of the illness for the few days immediately preceding his admission, I am indebted to Dr. Vincent Green, from whose full report the following is taken. In spite of the abscesses and sinuses, Mr. B. had no rise of temperature. A fortnight before admission the patient complained of deafness on the right side. On examination by Dr. Green the right tympanic membrane was absent and the meatus blocked with inspissated pus. The left tympanic membrane was in a similar condition, with a discharge of a small amount of highly offensive pus. The ears were syringed and ear drops given. Four days later (April 11th) there was slight pain in the left ear, patient said he was bilious, and there was for the first time elevation of temperature and increase of pulse rate. Temperature was 101°, and pulse 100.

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Next day (April 12th) complaint was made of frontal headache, and patient had a rigor in a train. Temperature 102°. A solution of biniodide of mercury was used for syringing the ear.

On April 13th patient had a rigor which lasted half an hour. Temperature 103°, and Mr. B. suffered from intense frontal headache. No sickness, no discharge from either ear. After this, similar rigors, sometimes two in the 24 hours, recurred. Pulse varied from 85 to 95; the highest temperature recorded was 104°; there was no diarrhœa and no optic neuritis. The patient remained in this condition until admitted into hospital.

On April 15th Mr. Marmaduke Sheild saw Mr. B. in consultation with Dr. V. Green, and considered that Mr. B. was suffering from septic thrombosis of one lateral sinus, but that there was no evidence to show which side was involved. Mr. B., as a former student of Charing Cross Hospital, having expressed the desire to be admitted into that institution under my care, Mr. Sheild very kindly called on me and discussed the case with me. It is interesting to note that Mr. Sheild was certain of the diagnosis of lateral sinus pyæmia, but was equally certain that there was no symptom indicating the side affected. Mr. B. was admitted into the hospital on the afternoon of April 17th, and was examined by me shortly afterwards. For the following account of the patient's condition and the operations performed, I am indebted to Mr. P. L. Daniel, F.R.C.S. Eng., who was then house surgeon, and is now surgical registrar to the hospital, and to whose constant care and attention the patient owes very much :—

On admission the patient's temperature was 104·2°; pulse 100. There was a slight amount of purulent discharge from each external auditory meatus. No tenderness over mastoid in front of tragus or over the upper part of the internal jugular vein on either side; scar of incision over right mastoid.

Eyes.—Pupils reacted, and were equal, no photophobia, ptosis, or strabismus. Ophthalmoscopically fundi were normal.

Head.—No pain or tenderness on tapping in any part of cranium, except that the occipital region feels uncomfortable when patient rests it on the pillow, as if the latter were too hard.

Vascular System.—Pulse somewhat dierotic.

Heart.—No abnormal heart sound.

Lungs.—Breathing sounds somewhat harsh, otherwise normal.

Digestive System.—Tongue very foul, breath fœtid, vomited to-day for first time. Appetite previously large, now poor. *Urine*, trace of albumen. *Bowels* regular.

Nervous System.—Mind perfectly clear, but patient very deaf (from ear disease), reflexes normal. No ankle clonus discoverable. Examination of right lower extremity difficult owing to abnormal condition of hip and femur.

Diagnosis.—Lateral sinus septic thrombosis, nothing pointing to either side.

Treatment.—Antiseptic ear lotion. Quinine gr. v, t.i.d.

April 18th.—Patient slept badly but feels well. Mr. Morgan and Dr. Bruce kindly saw the patient with me, and agreed with the diagnosis. Temperature fell to normal and rose to 102°. No rigor to-day. Patient felt much better.

April 19th.—Had two severe rigors of 10 and 20 minutes' duration. In the second rigor temperature rose to 105·2°, pulse to 100. After the second rigor temperature fell to 97·8°. Patient sleepless, depressed, and had frontal headache.

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April 20th.—Feels better, no pain. At 2 p.m. rigor lasting 20 minutes. Temperature 104·8°. Complains of pain in back and limbs.

April 21st.—No rigor to-day. Temperature varied from 101° to 103°. Bowels well opened. Feels better.

April 22nd.—Two rigors. Temperature in rigors 104°, remitted to 100·4° after rigors. Complains of continuous pain over base of heart, where patient feels as if he had had a blow.

April 23rd.—There is now a systolic murmur heard over the apex of heart. Two rigors, 12 and 9 minutes' duration. Highest temperature 103·8°. Fundi again examined, no optic neuritis.

April 24th.—No rigor. Systolic heart murmur heard varying in character. Temperature 99° to 101°.

April 25th.—No rigor. Patient feels better and looks better. No tenderness or swelling over upper part of left jugular vein. Systolic murmur more harsh and conducted toward left axilla. Temperature 98·4° to 102°.

April 26th.—No rigor. Temperature 99° to 101·4°. Urine still shows trace of albumen, but no blood or casts. Patient feels better. Sweats in mornings now. Cough for first time.

April 27th.—Had a good night. No headache. Profuse sweating. Temperature 99·6° to 103°. Cough worse. Sputa muco-purulent.

April 28th.—Feels very hot. Temperature rose to 103·6°. Rigor. Temperature fell in six hours to normal. Exceedingly deaf—cannot hear watch at all with left ear, and scarcely at all with right ear. Cough much worse, sputa copious and of prune-juice colour and partly purulent. Dr. Bruce saw patient to-day, confirmed observation that the systolic heart murmur had developed since he first examined Mr. B. on April 18th. He found moist sounds especially in right chest, and concurred in the opinion that Mr. B. was suffering from pulmonary infection and pyogenic endocarditis. Neither Dr. Bruce nor Mr. Morgan, who had kindly frequently seen the patient with Mr. Waterhouse, could decide definitely upon which side the lateral sinus was thrombosed. It was agreed that the patient's condition was all but hopeless, and that his only chance lay in arresting further infection, that it was useless to delay operation in the hope of localising signs appearing, and that the risk of opening the sinus of the wrong side must be run. As there seemed to be some increase of fulness over the upper end of the left internal jugular vein, and as there had been some slight tenderness on pressure a day previously, I decided, in spite of the former right-sided mastoid abscess, to explore the left lateral sinus. The patient's condition was now so toxæmic that no assistance could be obtained from his sensations.

At 6 p.m. the patient was brought into the theatre, and gas and ether were administered by Mr. Porter, assistant anæsthetist to the hospital. The left internal jugular vein was exposed 3 inches below the apex of the mastoid process, and was found quite collapsed and entirely empty of blood. This was evidence that there was thrombosis higher up. The vein was therefore divided between two ligatures, and the upper end brought out and sutured to the margin of the wound. The mastoid process was then explored. It was extremely sclerosed, and the mastoid cells were diminished in size and full of inspissated pus. The lateral sinus was exposed near the termination of its transverse part. It was aspirated, and the blood found to be semi-fluid. The sinus was therefore exposed 1 inch lower down in its vertical part well below the genu.

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Here it was found thrombosed. A free incision was made into it, and the clot with some puriform *débris* removed with a sharp spoon. The sinus had to be firmly plugged with cyanide gauze, owing to smart hæmorrhage from the patent transverse part of the vessel. A few drops of pus were found on exposing the sinus lying between the dura mater and the bone.

The mastoid wound was not sutured.

After the operation the temperature fell from 102·4° at 6 p.m. to 96·2 at 6 a.m. the following morning.

April 29th.—The patient was very sick during the night, and the pulse ranged from 56° to 68°. During the evening of 29th the temperature rose to 104°, but there was no rigor. Cough troublesome, sputa still resembling prune juice. Complained of pain at apex of left lung. Tongue very foul but moist. Breath very offensive. Taking quinine gr. xv and brandy ʒiii daily. Pulse rose to 96. At 8 p.m. Mr. Waterhouse dressed wound. On removing plug considerable venous hæmorrhage; plug reinserted. Wound in neck not dressed.

April 30th.—Had a good night except for coughing, sputa more copious and offensive, but contained less blood. Temperature 96·2° in morning at 6 a.m., but rose to 104° in evening. No headache. Feels better. Bowels opened. Profuse perspiration in the early morning. Bronchial breathing at right apex. Heart murmur still present.

May 1st.—Temperature 6 a.m., 97·6°. Profuse perspiration. Urine increased from 24 ounces to 50 ounces. Pulse varied from 68 to 104. Dressed at 5 p.m. Venous hæmorrhage on removing plug, but not so copious as at previous dressing. Discharge from mastoid wound had very fœtid odour. Incision in neck dressed. Sputa still containing blood. Temperature varied from 97° to 102·4°. Urine, 86 ounces; no blood or albumen. Dr. Eyre examined blood and proved presence of streptococci. (*See* Special Report.)

May 2nd.—Slight discharge of pus from right ear. Temperature 98° to 102°. Pulse 64 to 104.

May 3rd.—Dressed. Wound in neck healing. Mastoid wound still foul. Venous hæmorrhage on removing plug. Temperature 99° to 102·4°.

May 4th.—Temperature 99° to 102°. Better.

May 5th.—Temperature, highest, 98·8°. Better in every way. Read newspaper. Dressed. Venous hæmorrhage on removing plug.

May 6th.—Temperature 98·4° to 100°. Felt better than since commencement of illness.

May 7th.—Temperature rose to 104°. Vomited 3 ounces. Much sweating. No rigor.

May 8th.—Temperature 97·8° to 99·4°. Wound redressed, no bleeding on removal of plug. Neck incision healed. Mastoid wound clean and granulating. Systolic murmur still heard, also a few moist sounds in chest.

From this date (May 8th) to June 8th nothing eventful is to be noted. Temperature varied from 98° to 99·8°. Mastoid wound nearly healed. Dr. Eyre again examined blood on May 12th—this time with negative results. Patient became apparently convalescent, and was allowed to get out of bed on June 7th, when he seemed so well that he was told he might return home in two or three days' time.

June 8th.—At 6 a.m. complained of headache, and vomited after breakfast. Temperature normal, and then fell to 96·4°. Was sick three or four times during the day. Pulse fell to 56. In evening patient lay

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with body and limbs flexed, eyes closed, and he moaned, complaining of his head. Pupils equal, moderately dilated, and reacted to light. He could answer questions rationally, but the nurses reported that he was strange and rambling at times. Reflexes normal, muscular movements completely under control. Temperature rose to 99·4°. Complained of frontal headache. Drowsiness increased towards evening.

June 9th.—Temperature 99·4°; fell to 98·4°. Pulse 70. Slept fairly well. Headache less intense. Pupil reflex sluggish. There are no localising symptoms of the intra-cranial abscess suspected. No distinct optic neuritis, but some blurring of the margins of both discs. Patient vomited once. Breath very offensive. Restless and strange at times. Mr. Waterhouse thought that grasp of left hand was slightly weaker than normal. Knee-jerk on left side (sound leg) exaggerated. Slight ankle clonus.

June 10th.—Fairly quiet night, less restlessness. Temperature normal at 10 a.m. Pulse 72–80. Still complains of frontal headache. Mastoid wound still discharging slightly. Fœtid discharge from left meatus. Left pupil more sluggish and smaller than right. Urine normal. Mr. Waterhouse saw patient again at 3 p.m. Some difficulty in swallowing was now noticed. Grasp of left hand distinctly weaker than right. Memory of recent events very bad. Vomited once to-day. Some weakness of left facial muscles. Pulse 80–92. Temperature about 99°. Double optic neuritis present, more intense on left side. Mastoid wound reopened, and a few drops of pus evacuated. No real retention of discharge from this wound. At 10.30 p.m. Mr. Waterhouse again saw patient. He was now practically comatose and lay flaccid, and could not be roused. Cheyne Stokes respiration was distinctly marked. Pulse 50. Temperature normal, 98·4°. Patient had been very restless, and had moved head about from side to side. As it was probable that an intra-cranial abscess was present, and that, unless relieved by operative interference, death must inevitably result, it was decided to explore the left temporo-sphenoidal lobe, and, on failure to find pus, then the left cerebellar lobe.

The patient was anæsthetised by Mr. W. G. Porter with chloroform. Before full anæsthesia was obtained the breathing became weaker and almost imperceptible, and finally respiration entirely ceased. Artificial respiration was therefore performed, and continued throughout the operation. The wound in the soft parts over the mastoid process was reopened and enlarged in an upward direction, and a 1-inch disc of bone was removed, the centre being ½ inch behind the external auditory meatus and 1 inch above it. Pulse varied extraordinarily, being at one time 180 per minute, at another 60. The dura mater bulged into the wound, and there was no pulsation of the subjacent brain. An incision was made into the dura mater, and through the opening brain substance protruded. The temporo-sphenoidal lobe was thoroughly explored, but no pus was found. Artificial respiration being continued during the exploration of the brain, the latter was necessarily somewhat lacerated by the exploring needle, and once the needle was felt to tear cerebral substance. Mr. Porter now pointed out that the pulse was no longer to be felt, and that the heart sounds were barely audible. As the patient's condition was so desperate, an exploring syringe was, to save time, plunged through the tentorium cerebelli from above, and pus was at once found. Immediately on evacuation of syringe full of pus, containing about 1 ounce, respiration recommenced, and the pulse became again perceptible, and rapidly gained in strength. The left cerebellar fossa

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was then opened by the trephine, and the abscess, which apparently occupied the greater part of the left lobe of the cerebellum, was evacuated, several drachms of fœtid greenish pus escaping. As there was free bleeding from the cerebellar wound, the abscess cavity was plugged with cyanide gauze. The disc of bone removed over the temporal lobe was replaced and healed *in situ*. The wound was sutured above, and packed with gauze below. Before removal from the operating table, brandy per rectum and strychnine hypodermically were administered. The breathing soon became steady. Pulse 120, good volume and regular.

The patient did not regain consciousness for several hours, and then was very restless and violent, and had to be restrained. Temperature about normal.

June 11th.—Had taken no food by mouth, owing to difficulty in swallowing. Restless and moaning. Pupils equal and rather dilated; no strabismus noticed. Wound dressed; almost no discharge on removal of gauze packing; tube inserted. At 5 p.m. patient was so far conscious that he put out the tongue when told to do so. Temperature normal. Resented being pinched, but otherwise still lethargic.

June 12th.—Bowels moved by croton oil; good action. Still could not swallow. Rather restless, but more conscious. In the evening could swallow, and tried to articulate, but could only say "schlocken." Could now pass water properly. Seemed to recognise his mother. At 10 p.m. recognised Mr. Waterhouse and tried to speak to him, but "schlocken" was the only thing he could say. Tube still patent; discharge through it very slight in amount.

June 13th.—Dressed. Some discharge of pus. Tube removed; cavity of abscess explored with bent probe, and found of large size, probe entering 1¾ inches. Some brain *débris* removed from wound; tube reinserted. Speech:—Can say "Good morning," "Thank you," and "Good-bye," but cannot speak a sentence; everything ending with "schlocken." Some diarrhœa.

June 14th.—Dressed. Slight discharge. No obvious squint, but sees double. Called Mr. Waterhouse Mr. Bates. When asked if the name of the latter was Jones or Johnson, did not answer; but when asked if it were Waterhouse, said "Yes," but then called him "Waterloo." Temperature 98·4°, pulse 80–102. Heart murmur still present. Appetite good.

June 15th.—Rather drowsy to-day and yawning incessantly. Dressed. Tube blocked with foul *débris;* after this was removed, ʒi of dark greenish pus escaped.

June 16th.—Has right external rectus paresis. This was confirmed by Dr. Mackenzie Davidson and Dr. Mott. On some occasions appreciates what is said to him, at others does not do so. Grasp of left hand much improved.

June 17th.—Mentally better. Speech and pronunciation greatly improved. Vomited once. Paresis of right external rectus and diplopia continue. Dressed. No discharge. Appetite good. Pulse 80–110.

June 18th.—Vomited twice during night. Pulse and temperature normal.

June 19th.—Repeatedly saying "Oh! my!" for the past few days. Brighter, and recognises friends better. Wound dressed, found cleaner and granulating.

June 20th.—Ankle clonus and knee-jerks left side less marked. Much more rational, but speech no better.

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June 21st.—Temperature normal. Could not appreciate his name, Baker, when written on a slate, nor could he spell it when asked to do so, but signed his own name and in a good handwriting. He pointed correctly to the people whose names were written on the slate.

June 23rd.—Diplopia continues; right external paresis less marked.

June 24th.—Dr. Mott found slight conjugate deviation, the left external rectus acting somewhat spasmodically at times. Vomited twice. Dressed.

June 25th.—Speech better. Vocabulary more copious. For the first time complains that his right eye is defective, and, when trying to read writing on the slate, closes this eye.

June 26th.—He now recollects most things up to within a day or two of the second operation. About ʒi of pus escaped from the wound. Temperature and pulse normal.

June 27th.—Tube found outside wound, which was reopened with sinus forceps, ʒi of pus escaped. The patient at this moment felt giddy, said his eyes felt compelled to turn to the right. A new tube was passed along a probe into the cavity, and some cerebro-spinal fluid escaped. Speech much better. Can understand speech and written sentences, but cannot pronounce everything that he sees in writing. Dog he spells Pok, but pronounces as Dog. Beer he cannot pronounce, but says it is something to drink.

June 28th.—Vomited once; felt queer; considerable discharge of clear cerebro-spinal fluid from tube. Dressing required frequent changing.

June 30th.—Dressed. Vomited once. Tube replaced, cerebro-spinal fluid still escaping. Can now contract right as well as the left external rectus. Pronounced Mr. Waterhouse's and my (P.L.D.) name correctly for the first time.

July 1st.—Right meatus still discharging, as it had done throughout. No diplopia now, but says vision best in left eye. Prefers to read with the eyes separately; wants to get up. Reads the daily paper and understands it all. Dressing soaked with cerebro-spinal fluid.

July 8th.—A week of steady progress. Dressing soaked at times with cerebro-spinal fluid.

July 13th.—Smaller tube inserted.

July 19th.—Tube removed.

July 21st.—Granulations exuberant; touched with sulphate of copper. Small sinus.

August 20th.—Patient, who had gone on improving, left hospital to-day. Note by Mr. Daniel:—Wound has been healed for some days past. Patient can walk almost as well as before his illness. Finds it difficult to stand for any length of time. No weakness now on left side. Right external rectus now acts normally. Intellect quite clear, except that he cannot pronounce some words. Writing very defective.

When next heard of in October, 1899, attended students' dinner, and was engaged in practice as a dental surgeon.

In February was present at the students' dance and danced throughout the evening quite as well as could be expected with his lameness.

February 10th, 1901.—Mr. B.'s present condition:—Occasional slight discharge from right ear, scarcely any from left. Speech now almost perfect. Writing and reading power practically as good as could be wished. In full practice as a dental surgeon; can perform any dental operation. Can manage a gas and ether extraction comprising 16 to 20 teeth and stumps. Vision quite perfect. Works continuously six days

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in the week, from 10 a.m. to 5 p.m., in his surgery, and frequently also from 7 p.m. to 12 p.m. at mechanical work. Feels better than before his operations, and has increased in weight since. Grasp of hands good. Can walk 10 miles without great fatigue in spite of his hip condition, which still from time to time suppurates, an abscess having burst six weeks ago. Systolic murmur present.

Report by J. W. H. Eyre, M.D.

Bacteriological Examination. — At my colleague Mr. Waterhouse's request, I undertook a bacteriological examination of a sample of blood from this case. On May 1st I collected the blood from the patient under what may, for all practical purposes, be considered "aseptic conditions," in the following manner :—

The lobe of the right ear was first thoroughly washed with a pad of cotton wool wrung out in 1 in 20 carbolic lotion, considerable friction being employed in the cleansing process ; the antiseptic was removed by means of alcohol, freely applied, and the skin finally dried by vigorously rubbing with a wad of sterile cotton wool. These steps effectually remove the superficial germs, and at the same time render the lobe of the ear distinctly hyperæmic. A sterile hare-lip pin was used to make a small puncture at the centre of the prepared area, and the first few drops of blood that appeared were wiped off with another piece of sterile wool. Blood to the extent of about 1 cc. was now collected in one of the sterile glass pipettes, and after the manner described by Pakes in the 'Lancet,' May 29th, 1897. Before the blood had had time to coagulate, 2 cc. of sterile nutrient broth were drawn up into the pipette, the narrow ends sealed off, and the pipette well shaken to ensure admixture of its contents. The pipette was then placed in the incubator running at 37·5° C. After 24 hours' incubation at this temperature the pipette was examined, and it was at once noted that a growth had taken place, consisting of those minute flocculent masses, adhering to the sides of the glass, so suggestive of the streptococcus.

The pipette was opened and coverslip smear preparations made from the growth. Microscopical examination of these films showed that we were dealing with a pure cultivation of a streptococcus arranged in extremely long and convoluted chains, and staining well by Gram's method. Subcultivations upon the various laboratory media corresponded so completely with control cultures that there was no difficulty in identifying the organism as the streptococcus pyogenes longus.

Film preparations from the fresh blood at the time of collection were also examined microscopically, and, contrary to one's general experience, two of them were found to exhibit streptococci in short chains of four to six elements.

Eleven days later I repeated these examinations with blood obtained from the same ear, and under conditions precisely similar, but on this occasion no micro-organisms could be detected in the films from the fresh blood, and the broth cultivation, which was examined microscopically from day to day, remained sterile for six days—at the end of this time the observations were discontinued.

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Remarks by Mr. Waterhouse.

Among the many points of interest in this case time will only permit of reference to the more important. From the day of his admission into hospital on April 17th, and indeed for a few days prior to that date, there could be little doubt of the diagnosis of infective thrombosis of one lateral sinus, but there was the very greatest difficulty in deciding which sinus was involved. The fact that I had already operated four years previously upon the patient for supra-mastoid abscess on the right side made me inclined to suspect that it was that side upon which the sinus was thrombosed. I feared, and those whose advice I sought shared my fear, to operate upon the sound side lest I should thereby block this sinus and lead to disaster. It will be observed that though the patient was admitted on April 17th, it was April 28th before I felt any confidence in deciding upon which side I should cut down, and even when I did operate upon the left side it was in fear and trembling lest I might be attacking the sound side. It was only the desperate condition of the patient that, in my opinion and in that of my colleagues, then justified operation upon the left side. The signs of systemic infection were pulmonary and circulatory. The pulmonary symptoms occurred rather later than usual, and were insidious in their onset. Complaint, as usual, was made of localised pains in the chest with the subsequent development of prune-juice sputum and coarse *râles*, with a day or so later the presence of moist *râles*.

The involvment of the circulatory system was, I think, undoubted, though I had not previously, nor have I since, encountered a case in which it was marked.

On April 17th Mr. Daniel and I found that the heart sounds were normal.

On April 18th the patient was carefully examined by my colleague, Dr. Mitchell Bruce, who reported that the heart was sound.

On April 22nd patient complained of a dull continuous pain over the base of the heart which felt as if a blow had been struck there.

On April 23rd a systolic murmur was for the first time audible over the apex of the heart, for the next two days varied in character, becoming more and more conducted towards left axilla.

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On April 28th Dr. Mitchell Bruce again kindly saw the patient, and agreed that he was suffering from endocarditis, which had developed since he first saw the patient on April 18th.

On May 1st Dr. Eyre, the lecturer on bacteriology to Charing Cross Hospital, found streptococci in the patient's blood.

The above facts are, I think, sufficient to establish the diagnosis of pyogenic endocarditis. It may be objected that the endocarditis could not have been of pyogenic origin, because the patient recovered. We know, however, that pyæmia may be recovered from, and I would urge that Mr. B., having suffered from pyogenic troubles for the greater part of his life, had developed a power of resistance to pyogenic organisms greater than is possessed by ordinary individuals, that he was in fact partially immune, having manufactured so much anti-toxin. It was for this reason that I did not employ anti-streptococcic serum.

It will be remembered that the temperature remained high for several days after the operation on the lateral sinus. The cervical glandular enlargement over the upper part of the internal jugular vein, which in certain cases is so helpful in enabling the surgeon to determine the side affected, was here almost entirely absent, as not infrequently happens; at all times this is a somewhat unreliable guide in the earlier stages, *i.e.*, in those in which its assistance is chiefly required. It was because there was at the time of the operation some slight fulness in this situation, and there had the previous day been some degree of tenderness in this situation, that I was enabled to decide on which side to operate. This point certainly was helpful, but only in the later stages of the condition, when the time for successful interference had almost passed.

There is nothing of interest to note between the days following the operation on the lateral sinus (April 28th) and June 8th. On June 7th the patient seemed well, and was therefore allowed to leave his bed for the first time. During the three following days symptoms of intra-cranial abscess developed with such rapidity that at 10.30 p.m. on July 10th the patient was practically comatose, and manifested Cheyne Stokes respiration, and for the second time I feared that I had allowed the opportunity of saving life to pass. With a pulse of 50, double optic neuritis more intense on the left side, some difficulty in swallowing, and with grasp of left hand distinctly weaker than on the right, it may be objected that I ought at once to have trephined the left cerebellar fossa, and not have

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first explored the temporal lobe. My reasons for adopting the opposite course were (1) that at the previous operation I had found the mastoid cells so sclerosed and the roof of the tympanum so diseased, that I thought it more probable that pyogenic infection had occurred upwards through the latter rather than from the former; and (2) that I had only a few days previously operated upon a young woman placed under my care by Dr. Mitchell Bruce, in whom an abscess in the temporal lobe was found along with infective lateral sinus thrombosis, an association that, on the high authority of Professor Macewen, is not infrequent.

The cessation of respiration under even partial anæsthesia is, I believe, by no means rare in cerebellar abscess, and respiration always, I think, fails before the heart ceases to beat. Professor Macewen mentions a case of cerebellar abscess reported to him in which breathing ceased suddenly, and artificial respiration was maintained for 24 hours, the heart meanwhile continuing to beat. It would doubtless have been wiser if in my case I had operated without anæsthesia, as Professor Macewen did in a brilliantly successful case of cerebellar abscess, in which I had the privilege of assisting him in May, 1889. There is no doubt that owing to the necessity of keeping up artificial respiration whilst the exploring syringe was being used the substance of the temporal lobe was, especially on one occasion, badly lacerated, and to this his speech troubles were due. The patient at the time that the tentorium was punctured and pus aspirated from the cerebellar fossa was as near to death as it is possible to be, and nothing was more remarkable than the almost instantaneous recovery of the respiratory and circulatory centres on the removal of pressure. The weakness of the grasp of the hand on the same side as that on which the abscess is located was present in Mr. B.'s case. This, however, is a symptom which has proved in my experience distinctly misleading on more than one occasion, as localising the abscess in the cerebellum. Particularly was this the case in a female servant, aged 26, upon whom I operated at Charing Cross Hospital on the night of December 11th, 1900. In this case it was noticed by six observers that the grasp of the right hand was distinctly weaker than that of the left. In the presence of distinct indications of intra-cranial abscess and no localising symptoms other than this, I trephined the right cerebellar fossa with negative result. I then explored the right temporal lobe, evacuating

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3 ounces of stinking pus with the happiest results. I may draw attention to the fact that in these two intra-cranial abscesses I in both instances at first explored the wrong part, *i.e.*, in the case of cerebellar abscess I at first trephined for abscess of the temporal lobe, whilst in the case of abscess in the temporal lobe I first explored the cerebellum. In both instances, on obtaining no pus, I trephined the other region, and was fortunate in saving both patients. The cause of the right external rectus paresis I was never able to discover, and can offer no adequate explanation of its occurrence. The disturbance of speech so noticeable during the days following the second operation was clearly attributable to the injury inflicted upon the first and second temporal convolutions at a time when during the performance of artificial respiration, owing to the patient nearly falling off the table, the exploring needle was felt to tear transversely through the cerebral substance. This accident was much to be regretted, but in extenuation I may plead that it is not easy to avoid injury to the soft cerebral substance with an exploring needle when vigorous artificial respiration has to be kept up, and when owing to the dire urgency of the case no time is to be lost. The effects of this injury have almost completely passed off, and Mr. B. has kindly come before the Society to-night in order that the Fellows may be able to see his present very satisfactory condition. In conclusion, I would desire to express my gratitude to my senior colleagues the President of this Society (Mr. J. H. Morgan) and Dr. Mitchell Bruce for much valued advice and encouragement, especially in the earlier days of Mr. B.'s stay in hospital, to Mr. P. L. Daniel, F.R.C.S., who, as house surgeon, devoted so much attention to the patient, and whose full and careful notes of the case have been of great assistance to me in writing this report. I also thankfully acknowledge my indebtedness to the great pioneer of cerebral surgery, Professor Macewen, and attribute the successful result obtained in Mr. B.'s case chiefly to the fact that I strove to make use of the teaching which I was fortunate enough to receive from Professor Macewen when serving as his house surgeon in 1889.

The PRESIDENT regretted that such a short time was left for discussing the extremely interesting case which had just been related. He had known the case almost from start to finish. The case, as described by Mr. Waterhouse, spoke for itself, and the success which had followed his treatment of it was testified to by the presence of the patient among them that evening.

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Mr. DANIEL said the case appealed to him as one of very great interest, and showed what might be done by a bold and adventurous course of surgery. Having followed the case closely throughout its early period, when the symptoms which localised the disease were very few indeed, it seemed to him that even the very slightest indication of localising symptoms was of importance to the surgeon. The only localising symptom in the present case was the weakness of the grasp in the left hand. The patient's right hip was diseased, and that entirely excluded comparison between the left and the right leg. The indications as to whether the right temporo-sphenoidal lobe or the left cerebellar lobe was implicated were so very slight that it depended very largely on the experience of the surgeon, and to some degree on luck, whether he struck upon the side affected. There was no real symptom pointing to the left jugular vein as implicated in the case, for he had pressed it many times, but found absolutely no pain. Sometimes the right side was painful, sometimes the left. The moral of the case was, that very careful observation should be made of the minutest change in the muscular as well as in the nervous functions, such as increased reflex, whether superficial or deep. The patient had increased left knee-jerk, and that, with the weakness of the left hand, indicated clearly that there was abscess either in the right temporo-sphenoidal lobe, or in the left cerebellar lobe. There was no pain over the left cerebellar fossa, nor pain over the right temporo-sphenoidal lobe. The case was almost unique. He had read Macewen's work through, but could find nothing parallel to it. The recovery of the patient from the operation and from the damage caused by the abscess indicated that brain surgery was really in its infancy. He did not suppose Mr. B. had any left cerebellar hemisphere remaining, but doubtless he had a vermis which was complete in itself, and which appeared to determine the whole function of the cerebellum. As a matter of fact he thought the functions of the cerebellum were practically unknown, and the present case indicated that the hemispheres were quite subsidiary to the vermis. He supposed that Mr. Waterhouse had not interfered with the latter and, consequently, there had been no permanent damage to the functions.

Mr. G. LESLIE EASTES said one point in the bacteriology occurred to him as of interest, but it had not been commented on by Mr. Waterhouse. The case was one of certainly double mixed infection, if not indeed triple. Dr. Eyre found streptococci in the blood, the pus was green and fœtid. If it were green, that was probably due to the bacillus pyocyæneus, an organism which had been frequently found in abscess of the brain in connection with mastoid disease. He thought that in 60 per cent. of the cases of brain abscess in which the pus had been examined bacteriologically, that bacillus was found. But the bacillus pyocyæneus did not give rise to odour, and therefore it was possible that, in addition to that and streptococci, there was also present one of the anærobic organisms which had, on this occasion, failed to obtain recognition.

Mr. WATERHOUSE, in reply, said he agreed with Mr. Daniel as to the difficulty of localisation in cerebellar and cerebral abscesses, owing to the very slight symptoms. He was further of opinion that they allowed many lives to be lost through waiting for localising symptoms. Within the last few months he had had two very striking examples of that. One case occurred in the Charing Cross Hospital, in which the patient had merely very intense headache, but had a history of old-standing otorrhœa. He examined the optic discs, and found only slight blurring. The patient's pulse was somewhat slow. After examining further he felt

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almost inclined to trephine the cerebral abscess. Unfortunately, he had not quite the courage of his convictions, and therefore asked for a consultation. The gentlemen who kindly saw the case with him said that they did not think there were sufficient indications present to justify operation, and that it would be better to wait a day, to see whether optic neuritis developed. They did wait a day, and he went to the hospital the following afternoon, saying to the house surgeon, "I have come to trephine that case." The reply he got was: "The man died suddenly ten minutes ago." About three weeks after that he had an almost precisely similar case, and though at a consultation he narrated what happened in the previous case, his own opinion was overborne by that of two physicians, who thought there was not sufficient justification for operating. He was invited to wait another day to see what happened. That patient died in the night. In both those cases *post-mortem* trephining over the temporo-sphenoidal lobe evacuated pus at once. Two lives were, therefore, sacrificed simply through delay in operating. With regard to the weakness of the arm on the same side, he now thought that in Mr. B.'s case he had not attributed sufficient importance to it. But in the other case which he related in his paper he attributed far too much importance to it, and was misled into trephining the cerebellum instead of the cerebrum. The case, as far as he knew, was practically unique in regard to most of the symptoms, and certainly so as to the endocarditis. There could be no doubt whatever that the patient was suffering from pyogenic endocarditis. The heart murmur developed while the patient was under observation. Dr. Mitchell Bruce, among others, examined the heart one week and found it normal, and a week afterwards there was a mitral systolic murmur. A day or two after that Dr. Eyre found streptococci in the patient's blood. He thought the patient owed his recovery chiefly to the fact that he had suffered from pyogenic troubles all his life, and as a consequence had developed a considerable amount of anti-toxines which rendered him almost immune. He was in entire agreement with Mr. Daniel when he said that the patient had evidently no left cerebellar lobe. The probe, when exploring the abscess cavity, passed 1¾ inches in all directions. He was very glad that the bacteriological side of the case had received attention in the discussion. He agreed that it was a case of certainly double and possibly treble infection. The fact which gave him considerable trouble was that there had been numerous tuberculous abscesses, and for some time he wondered whether there was some tubercular lesion in the case. He was much obliged to the Fellows for the way in which they had received his paper. Mr. B. had kindly come forward to show himself, and he (Mr. Waterhouse) could practically say he was perfectly recovered. He was now attending to a very busy and arduous practice, and in several conversations with him he had not detected Mr. B. committing any mistake in speech. He did rather blame himself that he unnecessarily injured the temporo-sphenoidal lobe, but it had to be borne in mind that the operation was done at midnight, under adverse circumstances, that the respiratory centre had failed, the circulatory centre was failing, and time was a great object. He plunged the aspirating needle into all parts of the temporo-sphenoidal lobe, and, unfortunately, during this performance the patient nearly tumbled off the table owing to the artificial respiration being vigorously conducted. The puncturing of the left cerebellar lobe through the tentorium cerebelli was performed owing to the urgency of the case.

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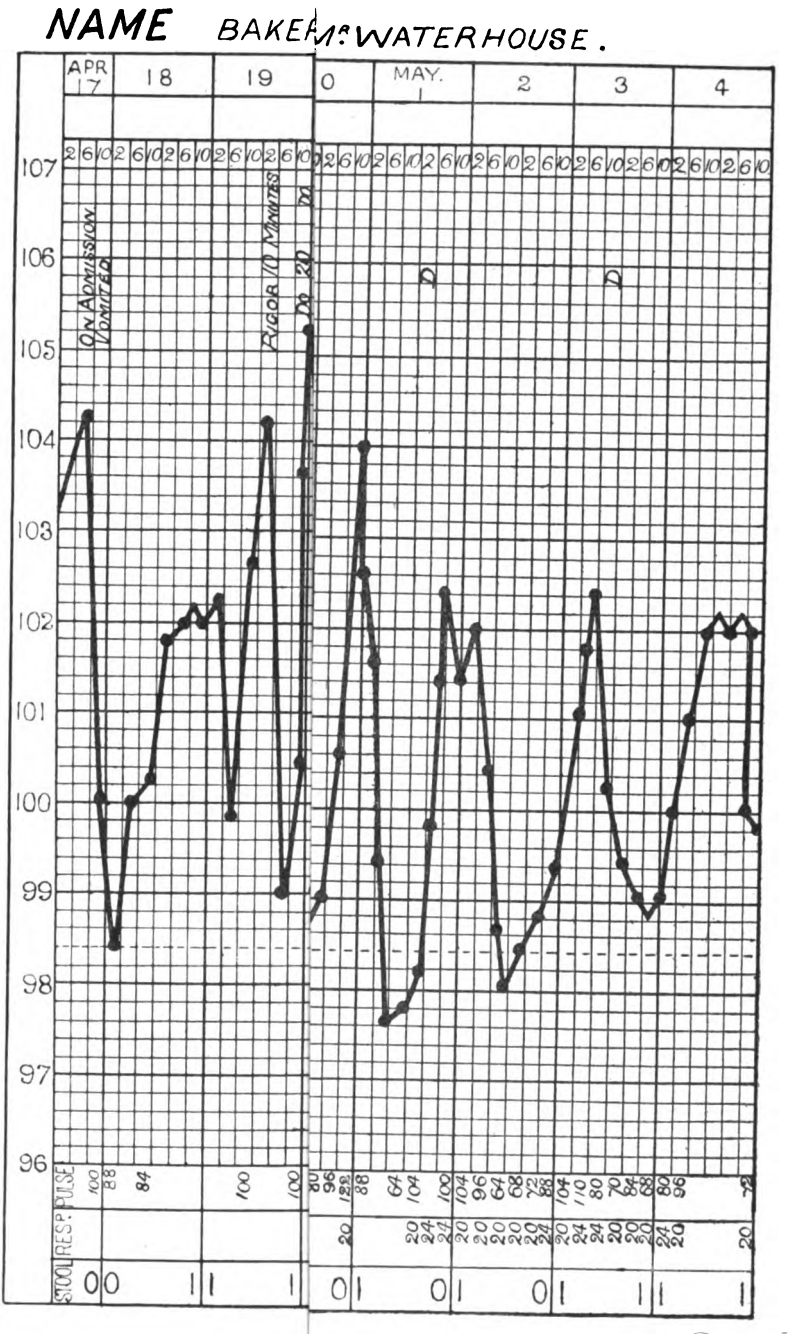
(*To face p.* 192.)



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April 22nd, 1901.

A CASE OF EXTENSIVE ENTERECTOMY.

By ARTHUR E. BARKER, F.R.C.S. Eng.

THE following case illustrates a very dangerous sequel to an ordinary simple strangulated femoral hernia operated on in the usual way, and its cure by extensive enterectomy. It also suggests some questions bearing upon the general treatment of cases of severe strangulation without actual gangrene :—

Mrs. T., aged 39, was admitted into University College Hospital on July 1st, 1900. Her personal and family history were excellent. She had suffered from a right femoral hernia of moderate size for four or five months, which had come down during a bad fit of coughing. It gave but little pain or other trouble, and always returned on lying down. On the afternoon of June 30th, 1900, some 18 hours before admission, the hernia came down while the patient was walking in the garden, and caused great pain all over the abdomen and back, which was continuous. At 9 p.m. she vomited, and at intervals during the night. She took some castor oil, but brought it up at once. On one occasion the vomit contained a little dark blood. The next morning she was admitted, and I operated at once (July 1st, 1900). The usual incision was made for femoral hernia, and when the sac was opened a good deal of fluid escaped of high colour and foul smell. The gut was dark, congested, and œdematous, but retained its lustre. Both the sac and gut were now carefully washed before the constriction was divided. The bowel was then drawn down and examined for further damage, but none was found. As the œdema of the bowel soon began to disappear when released, and as the circulation seemed good, it was washed and dried and reduced into the abdomen. The usual radical cure was then done, without any drainage. Recovery was rapid and uncomplicated, except by flatulence. The bowels acted naturally on the sixth day and after. There was no sickness after the operation, but some pain in the abdomen. The stitches in the skin wound were removed on the tenth day, when perfect primary union was found. The patient left hospital perfectly well on the sixteenth day for Brixton.

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Some weeks later I heard from her medical attendant, Dr. Horden, that she had a severe attack of intestinal obstruction, with great pain and vomiting. This passed off, however, under his treatment of opium, enemata, and fomentations, and she was able towards the end of August to return to her home in Cornwall; but before doing so she called to show herself, and then seemed in excellent condition.

At the beginning of October, 1900, I had a letter from her medical attendant, Dr. Hitchen, of Redruth, to say that on September 9th she had been again suddenly attacked by intestinal obstruction in a very severe form, with great pain starting in the right groin and spreading all over the abdomen, with vomiting and distension, so that he feared for her life, the collapse was so severe and the peritonitis so extensive. His very skilful treatment was, however, followed by recovery. His object in writing was to suggest an exploration of the abdomen, as it seemed beyond doubt that there must be a kink or adhesion, or both, about the point of bowel originally involved in the hernia.

The patient returned to London with this end in view, and was readmitted on October 13th, 1900. She appeared in good condition, but gave a history of great constipation alternating with diarrhœa ever since the first operation, combined with much flatulence. Since the last attack on September 8th she has only had to complain of irregular bowels, flatulence, and painful spasms on the right side of the abdomen. On examination, there was no trace of return of the hernia at the seat of the first operation, and no tenderness there; the abdomen was generally soft, but there was some tenderness in the right iliac fossa on deep pressure, and some indefinite thickening and resistance there as well. Nothing else abnormal was found in the abdomen.

Operation, October 18th, 1900.—Taking the view that there must be either a kink at the original seat of hernial strangulation, or bands of adhesion, or both, I opened the abdomen by an incision along the outer border of the right rectus muscle below the umbilicus. It was at once seen that the small intestine was matted together by many firm adhesions round the knuckle of intestine which had been in the hernia, and which was fixed in the position in which it had been returned. It was sharply kinked, and soldered up by fibrous material in this position. The adhesions spread for a considerable distance around, and one loop a foot from the kink was fixed by

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a strong band out of sight on the *left* side of the abdomen. To reach this I had partially to divide the right rectus transversely from without, and then only with the greatest difficulty could this band, which was about as thick as a goose-quill, be separated from the bowel. An attempt was now made to undo the kink, but it only resulted in opening the damaged, softened intestine. I therefore closed the intestine above and below all the portion involved in the matted adhesions with Doyen's forceps, and removed the whole mass, cutting the mesentery close to the intestinal attachment. The cut ends of the bowel were now united end to end in the usual way by two rows of silk suture, a deep and superficial. The hole in the mesentery was also closed, and the area of operation was dried out. The transverse cut in the rectus was stitched up with buried sutures, as also the upper part of the vertical incision; the lower part of the latter was left open to hold a gauge drain for a few days.

The patient bore the operation very well, and convalescence was uneventful except for a slight rise of temperature for the first few days, until the gauge drain had been removed. She had been rather collapsed on the evening of operation, but recovered rapidly under saline injections under the skin, and rectal injections of brandy and water.

The bowels acted well on the fifth day, and almost daily subsequently. The superficial wound healed by first intention, except at the lower angle, where the draining gauge lay, and at the upper angle, where some serum was pent up in the fat. She was fed by the mouth with small quantities of albumen water from the second day onwards, and was soon taking light solids. At no time was there any trace of fæces in the drainage from the lower angle of the wound.

The patient returned home to Cornwall just before Christmas, quite well and growing fat.

Surgical Registrar's Description of Specimen Removed.

The portion of intestine removed measured 2½ feet. Examination subsequently by the Curator showed that the portion removed measured 37 inches. The upper 7 inches above the obstruction was hypertrophied and dilated. The chief obstruction consisted of an atrophied fibrous shrinking of the bowel, reducing its lumen to

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the size of a cedar pencil at one spot about ⅓ inch in width. Immediately around this, and for 8 inches below, the bowel is irregularly distorted by adhesions which matted it together during its stay in the abdomen. Towards the lower end there are several more adhesions, which do not distort the gut.

This case must, I think, have a certain interest for all surgeons, whether in general or special practice. It illustrates the need of early operation in all cases of strangulated hernia. It also shows that, although relatively early operation may be done and be immediately as successful as any such measure can be, all dangers are not necessarily thereby prevented. In this case we know the moment at which the strangulation began certainly. We know that the operation was done about 18 hours later. We know that the bowel, although discoloured, showed active circulation and no lymph upon its surface. And yet, though the recovery was perfect from the reduction and radical cure, a most serious condition of things was left in the abdomen, which led to two severe attacks of intestinal obstruction, and ultimately required one of the most serious operations of surgery. The first operation for the strangulated hernia was quickly over, and involved no great exposure of the gut or manipulation. It was such as one constantly does without misgiving. And yet the changes induced in the bowel by the strangulation were very grave.

Fortunately, the subsequent attacks of obstruction were under the care of two highly-skilled general practitioners, who not only treated them with the utmost judgment, but also recognised the need of subsequent surgical interference with promptness.

And it is also fortunate that now, in enterectomy, we have a means of remedying such conditions as result from kinks and adhesions without such severe risks as were formerly bound up with excisions of the intestine.

The PRESIDENT said the case related by Mr. Barker was a very interesting one, and brought before the Fellows the difficulty which must occur to every operating surgeon as to what line of action to pursue in the case of a piece of bowel which was in such a state of congestion, or possibly strangulation, as to raise the question of its capability of recovery, and whether immediate resection should be done. Again, there was the consideration that, however far the judgment of the surgeon might prove correct in the matter of immediate recovery of the bowel, both in condition and in function, there still remained the

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possibility that the constriction to which it had been subjected might leave adhesions such as proved to be the cause of very considerable obstruction in the present case. He supposed that the younger the surgeon the more inclined he would be to agree with Mr. Barker's choice in such matters, namely, to prefer resection to returning the gut in any condition of a suspicious character. Nowadays it seemed a matter of small moment whether one removed, as Mr. Barker did, 37 inches of intestine, or even a larger portion. Many cases were related in which recovery had followed and perfect functional activity been maintained, after removal of even longer portions of intestine than that. It was a matter of judgment on the part of the surgeon, based upon experience; but, for his own part, he would hesitate to remove a piece of intestine which showed signs of returning vitality, on the supposition that it might later give rise to stricture or adhesions. He thought there could be no doubt that removal of intestine was attended by a considerable amount of danger, even in the present state of abdominal surgery. In other words, he would say it was an operation which should be avoided unless absolute necessity demanded its performance. But all those matters were subject to individual opinion and experience. The patient under consideration had certainly a very considerable amount of strangulation, as shown by the condition of the gut—its darkness, and its loss of lustre; and he presumed her condition was not improved by the fact that after the strangulation had existed for some time she took a dose of castor oil. That, of course, was liable to complicate matters, although she made a fair immediate recovery from the first operation. He would be pleased to hear the opinions of Fellows on immediate resection in cases of doubt. Would they resect, or would they leave the gut where it appeared to have a chance of recovery, and trust to Nature to restore it, putting aside the very remote possibility of such an occurrence as happened in the present instance? The occurrence of adhesions and stricture after hernia must be very rare. Operations for strangulated hernia were common, but how many surgeons had found it necessary to open the abdomen again on account of stricture in the part of the gut which had been previously strangulated? The answer must be, very few. Where stricture existed in a patient who had been operated upon for hernia, the obvious conclusion was that the symptoms of stricture were brought about by the previously existing hernia; but even such a thing appeared to be very rare. He would, therefore, be inclined to take the risk of that occurring where the condition of the gut presented a fair prospect of recovery of function.

Mr. MALCOLM said Mr. Barker had raised one of the most difficult points in abdominal surgery. In the case related there was no doubt that the bowel was capable of recovery because it did recover. The question therefore was whether Mr. Barker could have anticipated that the adhesions would take place and lead to strangulation. He (Mr. Malcolm) thought it impossible to do any abdominal section at all without incurring the risk of obstruction from adhesions afterwards. He had seen such adhesions causing death after the most simple operation, in which there was only a very small pedicle. It was, therefore, important to know what the mortality from primary resection of the bowel was. He was not prepared with any opinion on that point, but would be glad if any facts could be stated. His view was that the death rate would be high if all cases were recorded. He believed that Mr. Barker's case was in a much better condition to stand resection at the second operation than at the first. He wished to ask Mr. Barker a question,

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namely, whether at the time of the first operation there were any signs of adhesions of the intestines, either to each other or to neighbouring parts. He had described an adhesion at the second operation to the left side of the abdomen, which he had very great difficulty in reaching from the incision on the outer side of the right rectus muscle; and it seemed to him (Mr. Malcolm) that that adhesion was most likely a complication of the first operation caused by inflammatory mischief. He thought it would be a very serious matter to add to the difficulties of those operations the question of estimating whether adhesions might take place to a dangerous extent, although the bowel seemed to retain its vitality. Just recently he had operated on a very large inguinal hernia and put back a mass of bowel, the coils of which were adherent in many places. Certainly in that case the question might have arisen whether the whole mass should not have been resected. The point did not arise in his mind, because the patient was a woman, aged 75, on whom he had already done a difficult hysterectomy for a sloughing fibroid, and therefore the operation for radical cure had to be performed as quickly as possible. The intestines had since given little trouble, and he hoped that the gut would recover its vitality and function.

Mr. BARKER, in reply, said he was much obliged to the President and to Mr. Malcolm for their remarks and suggestions upon the case. The remarks he had made were but in the nature of suggestions, for he would be a very bold man who attempted to dogmatise upon those matters at the present time. His impression, however, was that surgeons were a little too much afraid of enterectomy, especially in cases of strangulation and gangrene. It was thought that in that operation the risks of resection were greater than those of reduction. In reply to Mr. Malcolm, he would say at once that when he examined the loop of intestine it was first washed, the stricture divided, and then pulled down freely to see that there was nothing above. No trace of adhesion could be found anywhere. The President had made a slight error, for the intestine had not lost its gloss, though it was discoloured. After the constriction was divided he pointed out to his dressers that the circulation was recovering, that the œdema was subsiding, and that it looked a fairly hopeful case. From what the Registrar afterwards found, there must have been ulceration and a good deal of exudation in the walls of the intestine which was quite invisible from without. Of course it was a serious thing to do enterectomy, but he would remind Mr. Malcolm —with whom he agreed in most respects—that the patient really ran very serious risks without that operation, as evidenced by the attacks she went through. The last was described by her doctor in Cornwall as a most alarming general peritonitis, in which she was very collapsed and nearly lost her life. By good luck and good management on the part of the medical attendant she did pull through, but she would have been saved those risks on two occasions if enterectomy had been performed on the first occasion. The judgment of the gentleman who subsequently advised her to come to London to have the abdomen opened proved to be very sound, for otherwise a third attack would probably have cost her her life. On thinking the case over he asked himself the question whether, if he had another case like it, he would not be doing his best for a patient by immediately performing enterectomy. He agreed with Mr. Malcolm that if a patient was in a bad state when strangulation existed it was better to put off the operation if one could, but the present patient was not in a very bad condition, the strangulation had only existed 18 hours. He believed she would have borne

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enterectomy then, for he had done it in worse conditions and the patients had recovered. With regard to the adhesion in the abdomen, which was referred to by Mr. Malcolm, he (Mr. Barker) had no doubt, from what he saw and heard afterwards, that it was an adhesion which formed during the attacks of peritonitis subsequent to the strangulation, because there was no trace of lymph about the abdomen when it was first opened. The adhesions which he saw and released at the second operation were still more or less hyperæmic, and he could see that they had been formed comparatively recently. As general peritonitis was present during the last attack most probably the adhesions formed then. But the adhesions which matted the intestines into a great hard mass undoubtedly followed the original strangulation. That would have been prevented by enterectomy. If he had done it at first he would have taken out nearly as much intestine as he actually did subsequently, for he thought one should cut well above and well below the diseased portions. So long as surgeons kept somewhat under 6 feet it did not much matter how much intestine was taken away. At a sister Society he recently recorded a case in which he took away 5 feet 6 inches of gangrenous gut from a very old woman, who recovered without the smallest trouble. He did not know how much she had left, but the loss appeared to make no difference to her assimilation afterwards, and certainly she went home very happy.

SHORT-CIRCUITING THE INTESTINE IN OBSTINATE ATONY OF THE COLON.

By C. Mansell Moullin, F.R.C.S. Eng.

The case to which I wish to call your attention this evening is that of a woman, 29 years of age, who was admitted into the London Hospital in October last year, suffering from atony of the colon. She was a sallow-faced, rather emaciated woman, somewhat neurotic in character, but not perhaps more than would be expected from the pain and suffering she had undergone. According to the account she gave, her illness began seven years ago with attacks of diarrhœa, which recurred every few weeks for upwards of a twelvemonth without any apparent reason. Each attack lasted for two or three days, there being from five to eight motions each day, very liquid, yellowish in colour, but not unusually offensive. Between the attacks the patient was fairly comfortable, and was not constipated. No blood was passed, and there did not appear to be an excessive amount of mucus. The diarrhœa was not influenced by diet, and there was no gastric dyspepsia worth mentioning. At the end of about a year the diarrhœa subsided, and two months later constipation set in and became more and more obstinate. Relief could be

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obtained at first by means of purgatives without much difficulty. Then these failed, and recourse was had to enemata. Nothing had been passed without an enema for the last five years. During the whole of this time the patient had been liable to violent attacks of pain, described as colic, coming on at intervals many times a day, involving the whole abdomen more or less, but chiefly the left side. These attacks, which often lasted for some hours and were attended by the greatest suffering, were much worse when the bowels did not act. Defæcation was usually accompanied by a very severe one. The motions, which were small and hard, were passed once or twice a week. Partly from the pain, partly under the idea of diminishing the amount of fæces, the patient had taken less and less food, and had naturally become weak and emaciated, so that she was practically bedridden.

The patient had been in hospital many times in the course of the last five years, and had had several operations. Three years ago laparotomy had been performed at Bournemouth, because of pain, and the appendix had been removed. Two exploratory laparotomies had been performed at Addenbroke's, through a median incision, and, according to the account kindly supplied by the house surgeon, the viscera were found to be healthy, with the exception of some adhesions, one in particular between the left ovary and the mesocolon, where the gut was somewhat occluded. These adhesions were divided, and for 14 days the patient had less pain. But the constipation was not relieved, and at the end of that time the pain returned with all its old intensity. The scars of these operations were plainly visible.

The patient was a thin, nervous woman, only $6\frac{1}{2}$ stones in weight, with an anxious, worried expression of countenance. According to her own account she had lost weight and strength to a serious degree in the last 12 months. The catamenia were very irregular. The appetite was exceedingly bad, and she was quite incapable of any exertion. Heart and lungs presented nothing abnormal. The abdomen was flat and a little excavated. A few scybalous masses could be felt on deep palpation upon the left side. Both flanks were very tender, and the skin covering them was exceedingly sensitive, especially to a light touch. There was no increased sensitiveness to heat or cold. Nothing but one or two scybala could be felt per rectum. The bowels were absolutely confined. Ordinary purgatives had no effect upon them, except that of increasing the pain. After

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enemata they would act but with difficulty. Massage, with which she was treated at first, seemed merely to make the pain worse.

After some days, as there was no improvement, the patient was transferred to the care of my medical colleague, Dr. F. J. Smith, who treated her for some time with massage, galvanism, enemata, and large doses of belladonna with opium. No benefit followed, and as the patient continued to lose ground, being worn out by the constantly repeated attacks of pain, I determined to open the abdomen, for the fourth time, and short-circuit the intestine, leaving the colon out altogether, by making an anastomosis between the lower end of the ileum and the sigmoid flexure. The median scar was excised; one or two adhesions of no importance found and divided; the stump of the appendix inspected, and a lateral anastomosis by direct suture effected between the ileum and the sigmoid. The colon was examined and inspected for some distance, but appeared to be perfectly normal, not particularly thickened or distended.

The after treatment of the case requires very little description. For the first two days the patient complained of a good deal of pain, but this stopped after that time completely. A small liquid motion was passed naturally on the next day, the first for six years, and again another two days later. The wound healed up without being dressed. The patient's appetite began to improve at once, and in a little while she put on a stone in weight, and was able to get up and go out, free from pain, the bowels acting readily with small doses of compound liquorice powder taken occasionally.

In all probability the trouble from which this patient suffered originated in an attack of colitis, the cause of which there was no means of ascertaining. The persistence of the constipation, however, could only be due to some disordered nerve action of the splanchnics, resulting in painful spasmodic contraction of the colon, in place of normal peristalsis. It is difficult to say how far this may have been due to the neurotic condition of the patient, and, on the other hand, how far this neurotic condition may have been the consequence, due to malnutrition and prolonged suffering. There was no evidence of anything wrong with the muscular or mucous coats of the bowel; and there was no enteroptosis or displacement of viscera. The hyperæsthesia to touch of the skin over the colonic areas, which disappeared after operation, and which was confined to the sides of the abdomen, over the ascending and descending colon, and did not

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affect the median portion, I do not regard as evidence of hysteria, but as merely the result of the transference of sensitiveness from the visceral to the corresponding cutaneous branches of the cerebro-spinal nerves distributed to the subserous tissue in the neighbourhood of those portions of the colon. Professor Lennander has recently shown that the sensibility to pain, which is such a marked feature of the parietal, as distinguished from the visceral layer of peritoneum, is due to the twigs of the intercostal, lumbar, and sacral nerves, distributed in the subserous tissue beneath, and that the pain of intestinal colic is caused by the stretching these nerves sustain when fixed portions of the intestine overlaying them are forcibly distended or contracted. This, if it is admitted, explains at once the cutaneous hyperæsthesia over the ascending and descending portions of the colon, and its absence over the transverse portion without the necessity of invoking the aid of hysteria. However this may be, it is quite clear that in this case none of the ordinary measures for exciting peristaltic action of the bowel were of the least avail, and the patient was rapidly drifting into the condition of a bedridden hospital chronic. It is not likely that the operation will be frequently required, but in cases in which a colon obstinately persists in refusing to do its work it seems rational to short-circuit the bowel and leave it on one side, especially as the operation cannot nowadays be regarded as a very serious one. A similar proceeding might be of service in those cases of severe colitis in which it is essential to give the colon rest for a while, in preference to subjecting the patient to the discomfort of an artificial anus in the cæcal region and the constant discharge of liquid fæces.

The PRESIDENT said the Society was very fortunate in having had that evening two such extremely interesting cases of abdominal surgery brought before it. Mr. Moullin's case was one of particular interest, though the occasion for such a procedure as he adopted must, as he admitted, necessarily be very rare. The woman had suffered from many surgeons—at least three important operations had been performed before the one which brought her benefit. He did not notice what method Mr. Moullin adopted for bringing about the anastomosis. He gathered there was no apparatus used. One was inclined to wonder what happened to the greater part of the colon which was left perfectly inactive for some time. Another important part of the paper was the physiological explanation given by Mr. Moullin of the symptoms pointing to the condition. He would be glad to hear the observations of others.

Mr. ALBAN DORAN said Mr. Mansell Moullin's paper was very suggestive of further advance in abdominal surgery, which might be made boldly with sufficient caution. One might ask whether he proposed, in intractable or constantly-recurring cases of tympanites, to practise

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short-circuiting. There were cases in which he believed it was absolutely justifiable. Middle-aged men and women were rather subject to tympanites, and he had recently had several such cases under observation. One was that of a middle-aged lady who for 15 years had so much tympanites as to make her appear as though she suffered from a large ovarian cyst. It gave very little trouble, except when she got cold, and then the swelling was enormous, and it looked like a malignant tumour of the worst kind, and there were dilated subcutaneous veins. Yet flatus passed, and so did the motions with the aid of a mild purgative, and the patient seemed none the worse. He had seen such cases in hospital, and wondered whether he might do a tentative operation. But there was a grave question to face—was the fault in the intestines? Was the condition due to adhesions? Many people went through life with adhesions, but it did not follow that they had tympanites. Draining of the intestine had been tried in cases of supposed atony of the colon, but air seemed to pass continually. Why not resect the colon? He had considered that matter, and talked to others of large experience, and he felt that they need have no conscientious objection to resecting colon, ileum, or jejunum for definite disease of intestine. The gut was at fault and should be resected. But he had a strong suspicion that in many cases of chronic tympanites the fault lay behind the gut, in the central and sympathetic system; the whole intestine was deadened. There was practically no vomiting in such cases; possibly there might be if the patient ate indigestible food, but such patients seldom had much appetite, and therefore only took light food. He believed that if almost the whole of the jejunum could be resected and fixed to the sigmoid flexure there would still be tympanites during the short remnant of the patient's life, and the sigmoid flexure would dilate. If there was any indication to a bold surgeon like Mr. Moullin and others, it was more in the direction of the operation performed last year in France, where, in a case of gastric crises dissection was made down to the splanchnic plexus and a theoretical operation performed, the lacework of nerves forming the plexus being freely handled. There had probably been posterior peritonitis, and in that the plexus was set free from dense deposits; at least the gastric crises ceased. The possibility that the cause might be central and not in the alimentary canal should give surgeons pause before they hurried to resect a colon which might be no more at fault than the rest of the small intestine. As to the mere handling of the intestine, they need not scruple to remove it. Last November Mr. Doran operated on a case —hysterectomy—where someone had made an exploratory incision and thought it would be dangerous to remove the fibroid. There were two coils of ileum high up, fixed to the cicatrix in front and the tumour behind. It was impossible to avoid wounding the gut, as the two coils had to be dissected out of dense cicatricial tissue, but he sewed up the wounds, and there was no further trouble and no shock. The uterus was removed and the patient recovered. Those who objected to abdominal surgery paid far too much attention to shock. In Mr. Moullin's case it seemed evident that the tympanites did depend upon the intestine itself.

Mr. MALCOLM said he had under care at the present time a case, which was incomplete, but in some respects seemed very much on a par with that related by Mr. Moullin. The patient was a nurse, aged 50, who for the last three or four years had been complaining of difficulty and pain in the intestine. Two years ago he explored the abdomen with the idea

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that the trouble might be due to gall-stones. He found nothing wrong with the gall-bladder or liver, but the appendix vermiformis was unhealthy and adherent; he could not find the end of it. It seemed to terminate in a cord, which was afterwards found by microscopical examination to consist of fibrous tissue. He removed the appendix. The transverse colon and sigmoid flexure were also immensely distended, so that they nearly filled the abdomen, the small intestines appearing normal. He did nothing for this colic distension at that time because he thought inflammation in the region of the appendix might be the cause of all the mischief, and that it might settle down, which to a certain extent it did; the patient was much better for a time and resumed her work for some 18 months. Latterly, however, she again complained of much pain, and a mass could be felt below the left side of the transverse colon. Therefore, after consultation, it was decided to open the transverse colon with the view of arresting the trouble in the lower part of the intestine. He did this and found that the mass was a coil of very thin paralysed distended transverse colon. The colon was examined, and the upper part of the descending colon was found to be very much narrower than the other part, but he could not determine the exact condition of the sigmoid flexure without unduly extending his incision. The operation was of very little use because everything passed the fistula in a very short time, and keeping it open caused very intense pain which a neurotic woman, such as his patient was, could not bear. Last week he operated and pulled out the thin piece of gut, resected it, and brought both ends of the intestine to the surface so as to make sure that the intestines should empty themselves through the fistula. Another operation would have to be performed before the patient could be considered cured, but he hoped in this way to relieve the pain. Mr. Mansell Moullin's case seemed to indicate that it would have been more satisfactory to have divided the small intestine and to have made an anastomosis with the sigmoid flexure. The cause of those conditions was, he thought, very obscure. In making *post-mortem* examinations in cases of abdominal section he had often seen colons like the one he had described, and very often the upper part of the descending colon, as in this case, was the part which was narrower than any other portion of the large gut. He could not say what the significance of the condition was, or whether it was a *post-mortem* condition, but in one case he was sure that death was due to obstruction there. Five or six inches of the descending colon were very narrow, and were crammed with hard fæces. In other cases he had seen the same kind of thing—the narrow part of the gut being usually in the upper part of the descending colon.

Mr. BARKER referred to a case in which he made a similar anastomosis, but with a different object. It was to obviate the distress of a huge fæcal fistula in the right loin, which had resulted from the opening of a large fæcal abscess for suppurative appendicitis in an elderly woman. He did not see the original operation, but all the patient's fæces were passing through a gash in the side. Everything was done that could be done to close that opening, and finally he had to do short-circuiting. He short-circuited the ileum 2 feet above to the transverse colon, and fearing that the liquid fæces would still pass down through the remaining portion of the ileum, he kinked it as far as he could, folded it, and stitched the whole thing up between the anastomosis and the opening in the loin. The patient made a straightforward recovery in that respect, and for the first time for many months passed her motions normally. But it was quite plain that the kinking had failed, because after some weeks the

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leakage began again, and was sufficient to give a good deal of distress, although the greater part of the fæces passed in the normal way. Still, the amount was sufficient to keep the gap open. He opened the abdomen again, examined where the kink was, and found that the fæces were capable of getting through there. There was nothing to be done but divide the intestine below the anastomosis, turning the ends both ways, dividing the colon transversely above the anastomosis, and turning the ends in both ways. She made a good recovery, and ceased to pass fæces by the opening. That was a suggestion to Mr. Moullin, that if he wished to stop the fæces from getting into the colon it would have to be by transverse division. He thought nothing could get past the kinking which he had made, but he proved to be wrong. He was glad to hear that Mr. Moullin did not consider intestinal operations so difficult and dangerous as surgeons had been inclined to think. For one suggestion he (Mr. Barker) was exceedingly obliged to Mr. Moullin, namely, that in cases of chronic colitis surgeons should do transplantation rather than a right inguinal colotomy. That was a distressing condition when a patient had the fæces coming through the right flank, and although he might in time recover from the colitis, there remained a very distressing condition which was difficult to remedy in many cases. Such a patient would be relieved by simply anastomosing or transplanting the lower end of the ileum into the sigmoid flexure, a course he would be inclined to adopt in a case of the kind. Many of the cases in the same category as that described by Mr. Moullin were undoubtedly purely neurotic. He might mention the case of a lady on whom two years ago he was asked to operate for a very similar condition. But he was so aghast when he counted 15 scars on the abdomen that he declined to have anything at all to say to the case, despite the anxiety of the patient to have another operation performed. He subsequently found that a variety of surgeons had been at work upon that abdomen. He believed that the lady had nothing palpable or definable the matter, and that the case was purely hysterical.

Mr. MANSELL MOULLIN, in reply, said, with regard to the President's question, he united the ileum to the sigmoid by direct suture, sewing the two together by a double set of stitches, one on the outside or muscular coat, and the other on the mucous coat. He was much obliged to Mr. Barker for his hint about kinking the intestines. The same idea had occurred to himself, and certainly after his experience he would not try it. He felt that the only way of preventing the contents of the intestine following the natural route was to cut the natural route short altogether. Apparently a lateral anastomosis, if the rest of the intestine were fairly healthy, had a very strong tendency to close, unless it was made of a colossal size. If it were 6 inches in length it was difficult to understand that it could close, but one of 2 or 3 inches in length apparently would. It was exceedingly difficult, in cases such as he had related, to discover how far the complaint was due to a pure neurosis. He supposed that in this case the real cause was neurotic. But one had to relieve the condition, and the physicians had given her up as practically hopeless. Under those circumstances he thought surgery might be allowed a chance, not of curing the neurosis, but of alleviating it. He was obliged to Mr. Doran and Mr. Malcolm for the mention of their two cases, but his own was a little different from those they had described, in that there was very little distension of colon; there was spasmodic contraction attended with violent colicky pain. He relied upon the cutaneous tenderness which was present over the two flanks as an indication that

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in all probability the colon alone was involved. The small intestine might have been involved, but the fact that the cutaneous tenderness was so marked in the two flanks caused him to believe that the mischief was mainly in the colon, and that was why he joined the ileum to the sigmoid.

May 13th, 1901.

ACUTE COLITIS IN CHILDREN.

By Edmund Cautley, M.D. Cantab., &c.

It is a remarkable fact that the occurrence of acute colitis, or ileo-colitis, in epidemic form is almost unknown, or at any rate unrecorded, in England. Even in America, where diarrhœal affections in children are more common and more severe during the hot season than in England, the disease does not seem to have attracted attention as an epidemic. A small but very definite outbreak has recently come under my observation, and is well worthy of publication.

Six out of 30 children were affected, and of these four died. Four of them came under my care and two of them died. Three out of 13 adult women were attacked less severely and recovered.

The first case I saw in consultation with Mr. D. Boyd Keown, who kindly agreed to transfer the child to the Belgrave Hospital for Children for treatment, and has since supplied me with the following particulars of the epidemic:—

Habitation.—All the cases broke out in certain London barracks, in rooms opening on to a common staircase. On this particular staircase there are four floors, with four rooms on each floor. Thirteen families, consisting of 13 women and 30 children, occupied these 16 rooms, three of the larger families having two rooms apiece. On the third floor lived three women with two, two, and five children respectively. The first cases broke out on this floor on June 20th and June 30th. Two out of the family of five children were affected and both died (Cases 1 and 2).

On the second floor lived three women, one of whom had four children. No case occurred on this floor.

On the first floor lived three women, one of whom had four children, another had five children, while the third had none. The last cases broke out here at the beginning of August. The

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mother of five and two of her children were attacked, and one of the children died.

On the ground floor lived four women with three, three, two, and no children respectively. The family of mother and two children were all affected, the first on July 14th, and of these the baby died. One of the women with three children was attacked, but not severely, and her children escaped.

Thus the epidemic started on the top floor, then attacked the ground floor, and finally the first floor.

Etiology.—As far as could be ascertained by personal inspection no fault could be found with the water supply, lavatory accommodation, or drainage inside the building. Just outside the entrance a pipe, carrying the rain-water from the roof, opened into a gully from which the grating had been removed. This gully was frequently full of stagnant, offensive water, and in one case (No. 3) the child had been noticed putting her hands in the water and then in her mouth. It must, however, be pointed out that other children living on adjacent staircases had access to this water and that the outbreak was limited to the one staircase. The milk supply for the families affected came from two different milkmen. The food supplies were bought outside the barracks. A very careful investigation by Mr. Keown and myself did not enable us to ascertain what the source of infection had been. Although the cases occurred during the hot months of the year the weather was colder than usual at the time.

The following are short details of the four cases which came under my charge:—

Case 1.—Daisy G., aged 5, was admitted on June 28th, 1900, and died on July 1st. On June 22nd the family had some fried mackerel of which the child partook. Vomiting and diarrhœa began at 4 a.m. next day and persisted in spite of treatment. On admission she was very ill, cold, and wasted. Temperature, normal; pulse, 140. Nothing abnormal was found on physical examination. The abdomen was lax and empty, and nowhere tender. Vomiting continued. The diarrhœa was profuse as regards frequency, 20 stools being passed on the 29th and 14 on the next day. The stools were small, sometimes not more than a tablespoonful at a time, green, containing mucus and blood, and very offensive. There did not appear to be any pain or tenesmus, though there was a history that indicated a certain degree of tenesmus. The child rapidly got weaker, and died of exhaustion at 2.25 a.m. on July 1st. The temperature reached 101° F. a few hours before death.

Case 2.—Thomas G., aged 3, was admitted on July 1st, 1900, and died on July 8th. Patient was brother of the first child and had slept in the

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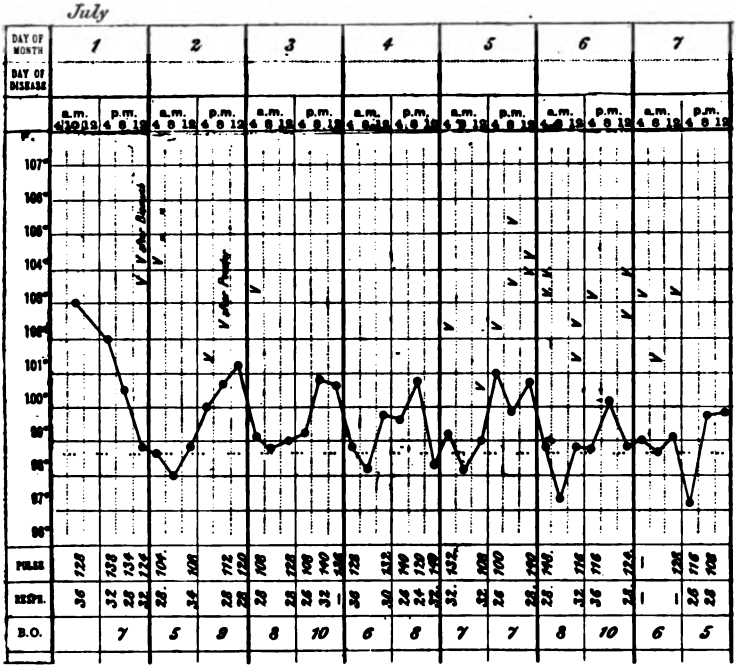
same be1. He was quite well until the afternoon of June 30th, a fine, strong, well-nourished boy. Illness began with abdominal pain, vomiting, and diarrhœa. On admission his temperature was 103° F.; pulse, 144; respirations, 36. Nothing abnormal was found on physical examination. Possibly the abdomen was a little distended, but there was no tenderness. The course and symptoms were the same as in the first case. The stools numbered from 11 to 20 in the 24 hours, small, green, containing bright red blood, mucus, and little fæcal matter, and were very offensive. Vomiting was troublesome and persistent; on the day before death he brought up some blood. He took food badly, was very restless, and died from exhaustion. The temperature chart is appended, seeing that it illustrates almost the whole course of the illness. No other cases occurred in this family.



Case 3.—Ethel E., aged 2, was admitted on July 18th, 1900, and discharged cured on August 27th. She was the elder of two, the other being a baby at the breast. It could not be ascertained that the illness was due to any deleterious article of diet, but on July 13th, the day preceding the onset, the child was noticed putting her hands into the dirty water previously mentioned and then into her mouth. On the 14th she was languid and had diarrhœa. In the evening she vomited after medicine and had a little colic. Next day the vomiting was continual and the diarrhœa worse, with a large amount of blood in the stools. The hæmorrhage was severe on the following day and then diminished,

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more mucus being passed. On admission she had a temperature of 101° F., was well-nourished, and presented a moderate degree of abdominal distension, without pain or tenderness. The fever lasted a fortnight, rarely up to 100° F. Vomiting ceased on the 20th. The diarrhœa persisted for a fortnight, the stools becoming less frequent and more fæcal. They were never as numerous as in the first two cases, 12 being the maximum number in 24 hours. At first they presented the usual characteristics and were very green. No blood was seen after the 31st, and no mucus after a few more days. The stools were unformed and offensive for a further 10 days, and after that became normal. At first the child was very ill, lethargic, and took food badly, improving steadily with the cessation of the diarrhœa. Otitis media occurred as a complication.

Soon after this child was taken ill, and before she was transferred to the hospital, the baby, aged 3 months and entirely breast-fed, was similarly attacked. She died after two weeks' illness, characterised by pyrexia and diarrhœa, the stools being green and containing blood and slime. After the baby the mother was attacked and passed blood in her stools for four days. Another adult woman living on this floor was also affected but less severely. She had three children who escaped.

Case 4.—Douglas M., aged 3, was admitted on August 11th, 1900, and discharged cured on September 17th. He was one of five children and lived on the first floor. This proved the mildest case of the series. He was taken ill on the 8th, and when admitted did not seem very ill. His tongue was clean; temperature, 100° F.; pulse, 130. The stools were offensive and contained blood and mucus. The vomiting and characteristic stools persisted for a week, but the stools never exceeded four in the 24 hours. Pyrexia was slight for four days. After a week recovery was steady and uneventful, though slow.

A brother was similarly affected, his illness beginning a week before this child was attacked. He was admitted to another hospital and there died. The mother was also similarly attacked and had a severe illness, being in bed for a week.

Morbid Anatomy.—In the first case it was found that the whole of the large intestine, from cæcum to anus, was enormously thickened, so much so as to form an almost rigid tube. The thickening involved the whole wall, but especially affected the mucous membrane. On the surface of the latter were some superficial minute abrasions, hardly sufficient to call ulcers, and small hæmorrhages. The last few inches of the ileum was acutely inflamed, but little, if at all, thickened. There was another small patch of inflammation in the ileum higher up. The mesenteric glands were swollen and one bronchial gland was caseous. Nothing else of importance was found.

The second case presented somewhat similar appearances. The acutely inflammatory condition of the whole of the large intestine was present and considerable thickening, but not the enormous thickening present in the first case. Quite 2 feet of the lower end

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of the ileum, continuous with the cæcum, was acutely inflamed, and a patch of similar inflammation 6 inches long was found in the ileum higher up. On the surface of the inflamed mucous membrane were small hæmorrhages, superficial abrasions, but no definite ulceration.

In both these cases the total duration of the illness was almost identical, but in the first the effect on the large intestine was much more severe than in the second. In both the main stress of the attack fell on the large intestine, the amount of inflammation of the ileum being in comparison of quite minor importance.

Nomenclature.—A certain amount of criticism may be directed to the name I have given this disease. That it deserves a special name must, I think, be conceded in view of the characteristic symptoms, course, and morbid anatomy. It must, however, be pointed out that cases of this description are generally included in that group of diseases described under the names of zymotic diarrhœa, inflammatory diarrhœa, enteritis, entero-colitis, ileo-colitis, and dysentery, or dysenteric diarrhœa. If one name be taken to include the whole of this group of diarrhœal diseases, that of ileo-colitis is apparently the most appropriate, for in the large majority there is present some degree of inflammation of the ileum. It appears to me that the time has come to differentiate these affections. In ileo-colitis, as described in the text books, it is usually stated that in only about half the cases is the ileum involved. Surely, then, the cases can be more appropriately classified under the name Colitis. The morbid anatomy of the two fatal cases showed distinctly that the pathological process was almost entirely limited to the large intestine. In fact in the first case the effect on the large intestine was so striking as to suggest the name of Acute Proliferative Colitis. The second case would, however, come more satisfactorily under the heading of Acute Catarrhal Colitis. On the whole I am of the opinion that this latter name is the most suitable one for the cases in this small outbreak.

There is, in this disease, more than a superficial change in the epithelium such as occurs in ordinary gastro-enteric infection. According to the nature and extent of the change a further differentiation can be made. Thus acute catarrhal colitis may occur with or without ulceration, or a follicular colitis may occur, and, further, a pseudo-membranous form has been described.

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General Description.

There is very little doubt that the cause of the disease is some form of microbial infection or toxæmia, almost certainly the former. The actual variety of micro-organism responsible has not been definitely ascertained either in these cases or in others which have been investigated. In Case 2, Dr. F. W. Andrewes found the bacillus enteritidis sporogenes and the bacillus coli communis, but could not definitely ascribe the disease to either organism. Streptococci were found by Booker in the deeper lesions in some cases which occurred in America. In a few others, which were, no doubt, true dysentery, the amœba coli was found by Cahen.

Although the disease is most common in hot weather it may occur at any season of the year. Sometimes it is secondary to infectious diseases such as measles, diphtheria, and some forms of broncho-pneumonia. Ulceration of the colon may also result from enteric fever and dysentery, and is occasionally due to tuberculosis or malignant disease.

The disease under consideration is most frequent in infants under 2 years of age; in fact, a certain amount of catarrhal or follicular colitis is not uncommon in fatal cases of inflammatory diarrhœa in infants at this period of life. It is noteworthy that in the present outbreak only one infant under 2—viz., a breast-fed infant 3 months old—was affected, that the age of the children varied from 2 to 5 years, and that three adults were attacked. Proportionately, the percentage of adults attacked was as great as that of the children.

Probably the primary source of the infection was some article of food or drink. In some instances it appears likely that the disease was acquired by direct infection from a previous case, perhaps from a lack of absolute cleanliness while attending to the invalid. Thus the second case may have been acquired from the first by sleeping in the same bed, which was undoubtedly contaminated by the fæcal discharges. Also in the third case the mother and her baby were attacked subsequently to the elder child, and seeing that the stools were frequent and offensive, and that the child first ill was nursed for some days by the mother, direct infection is a likely explanation. Moreover, the baby was entirely breast-fed, and did not even have water in addition.

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Symptomatology and Course.—In each case the onset was sudden with vomiting, diarrhœa, and pyrexia. Vomiting is a most pronounced feature, being frequent and persistent, varying in severity in different cases. It is not due to any affection of the stomach, and is most probably dependent on reflex irritation, though possibly caused by a toxin acting on the nervous centres. Anorexia is complete, and, like the vomiting, is independent of gastric conditions. The tongue, in one of the milder cases, remained clean throughout, but in the others was somewhat furred and tended to become dry and brown in the centre. The stools are usually green, frequent, very offensive, containing bright red blood and mucus, with little fæcal matter. Although very frequent the diarrhœa is not profuse, sometimes the stools are only about half an ounce in amount. There is no marked tenesmus. It was noted in the first case as present but slight, and was absent in the other three. The abdomen may be retracted and empty, or may be moderately distended. In no instance was any tenderness discoverable along the course of the colon. The facial aspect is of the abdominal type—sunken eyes, pallor, and anxious look. Restlessness is a marked symptom, and there is very considerable nervous prostration, quite out of proportion to the amount of diarrhœa, and very suggestive of a general toxæmia. The character of the pyrexia is well illustrated by the chart on p. 208.

In the fatal cases the vomiting, diarrhœa, restlessness, and fever persist in spite of treatment, and death results from the rapidly-increasing asthenia, which seems to be due largely to the effect of the poison on the nervous system and by no means to the severity of the diarrhœa. In a more favourable case the vomiting soon subsides, and the tongue, if furred, rapidly cleans; the blood disappears from the stools, next the mucus decreases, and the amount of fœcal matter increases, the stools becoming much less frequent. The stools retain their offensive odour for some days after the diarrhœa ceases and even when the motions are solid. With the cessation of the diarrhœa the pyrexia subsides.

Prognosis is bad in the acute cases. Although five out of the six children were over two years of age no less than three of them died. The indications on which I lay most stress as of serious import are vomiting, uncontrolled by drugs and diet, and restlessness. The frequency of the stools and the persistence of blood and mucus in them are also indicative of the severity of the attack.

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Treatment must be directed to maintaining the strength of the patient and stopping the vomiting and diarrhœa. Warmth and rest in bed are essential. Diet is all-important, for, in face of the complete anorexia and vomiting, it is extremely difficult to get the child to retain sufficient food. Thin arrowroot made with water is retained fairly well. Other foods of value are albumen water, meat juice, peptonised milk, milk diluted with a thin farinaceous fluid, and unsweetened condensed milk. In the worst cases nothing is retained long, the vomiting being due to reflex irritation and not to any gastric cause or the nature of the food. Stimulants are essential, and may be used freely. Brandy is the best.

Of drugs I found hydrochlorate of cocaine in doses of one-hundredth of a grain to combat the vomiting, and salicylate of bismuth in large doses for the diarrhœa, the most useful. Other drugs were tried, but the above gave the best results. Urotropine was given with a view to disinfecting the intestinal tract, but it exerted no influence on the offensive character of the stools. Opium by the mouth did not seem beneficial, and starch and opium enemata were of slight value.

Rectal irrigation was tried in one case unsuccessfully. Theoretically, irrigation of the large intestine would be beneficial by washing out mucus, micro-organisms, and other deleterious substances present. Practically it is very difficult to carry out efficiently in children and is strongly objected to. In view of the fact that the pathological process is more than a superficial one, it is unlikely to be of any great benefit. If used, a weak solution of boric acid is the best. Silver nitrate should not be employed.

Pathological Report on Case 2 by Dr. F. W. Andrewes.

The only organisms isolated were bacillus enteritidis sporogenes and bacillus coli communis. The former was obtained in anaërobic milk culture after heating to 80° C. for 10 minutes. It was virulent on a guinea pig. The latter came out in almost pure culture in aërobic cultures on agar agar and gelatine. Its virulence was not tested, but various chemical tests were applied and showed that it was ordinary bacillus coli communis and not Gärtner's bacillus enteritidis.

Microscopical Examination.—The contents of the colon, stained with methylene blue and by Gram's method, show a vast number

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of organisms of very various kinds, of which short bacilli, resembling bacillus coli communis, are the most abundant. Very few streptococci can be recognised.

Sections of the colon show a high degree of congestion. The mucous membrane is ulcerated away in many places, exposing the submucosa but not the muscular coat. At such places especially there is an infiltration with round cells, but this does not involve the muscular coat. The epithelium of the colon is desquamated in many places, including Lieberkühn's crypts. The submucosa, on the whole, shows very little infiltration except where actually laid bare by ulceration. Sections stained for micro-organisms show plenty on the surface of the mucous membrane and in the crypts, but they do not extend deeply into the mucous membrane. They are chiefly bacilli resembling the bacillus coli communis.

Dr. DE HAVILLAND HALL said he felt those present would agree with him that there were no cases which required more careful investigation and consideration than those of diarrhœa accompanied by vomiting, especially in children. In the summer time such cases were a source of great difficulty in the wards of children's hospitals, and, among the children of the poor, they were accountable for a large mortality. Up to the present time but little had been done to differentiate the various diseases comprehended under the terms "summer diarrhœa," "dysenteric diarrhœa," and so on. Dr. Cautley had now made a start in the right direction in grouping a special class of cases occurring endemically. He could not speak of acute epidemic colitis, but from the description given he thought that it was a condition of toxæmia rather than any particular local disease, and the local manifestations seemed to play an unimportant part in the disease. His reason for that statement was that the patients complained of very little abdominal tenderness, in fact Dr. Cautley said there was no abdominal tenderness and no distension. In other cases of colitis where the local lesion was prominent there was pain and tenderness, with painful attacks of colic. He had at present under his care in Westminster Hospital a small boy suffering from Henoch's purpura. He came first with joint-pain and acute colitis, as evidenced by marked tenderness and pain over the descending colon, and then over the ascending colon, accompanied by very frequent stools—12 to 20 in the course of 24 hours—containing mucus and blood. In that case the local symptoms were very marked indeed, so that there could be no mistake in diagnosing the presence of some mischief in the bowel, and probably in the lower bowel. The cases he had seen of acute colitis had been sporadic, and he had not yet been able to satisfy himself as to the cause of acute colitis occurring in children and young adults. He thought the explanation given by Dr. Cautley of the method of infection, namely from the stools, was highly probable. In regard to the infant at the breast, it was quite possible it might have been infected by sucking its mother's finger.

Mr. WALLIS said in the cases met with in his practice at St. Mark's Hospital the feature which struck him was that the inflammatory trouble was practically limited to the colon, a fact of extreme interest. He had

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had bacteriological examination made in such cases, but with negative results, which seemed also to have been the experience of Dr. Cautley. Possibly the reason for that was connected with the different condition of the intestinal contents in the small intestine as compared with those in the large. It was a matter of experience that if the contents of the small intestine escaped over the skin from a fistula, the skin became rapidly digested. That was not the case when the contents were exuded after ordinary colotomy. After cæcotomy that was so only to a limited extent. The question arose as to whether the contents of the intestines themselves were not deterrents to the action of whatever micro-organism produced these toxic effects in the small intestine. Therefore, would it be possible or reasonable in acute colitis to suggest that, where flushing out the intestine was not efficacious, cæcotomy should be done? It seemed to be a condition which could be dealt with by washing out the intestine.

Dr. VOELCKER agreed that the Society was very much indebted to Dr. Cautley for his narration of the cases, because he felt that such cases of colitis were not by any means common. It was therefore useful to have a group of cases related in such detail. Speaking from *post-mortem* experience in children, it had not been his good fortune to encounter many cases in which one could say that the disease was simply an acute colitis, and not a part of a much more extensive inflammatory condition of the whole alimentary canal, either enteritis or, more commonly, gastro-enteritis. He would like to ask Dr. Cautley what evidence he had to confirm his view that the attacks of vomiting which he spoke of were quite apart from any disordered condition of the stomach itself. It was well known that cases of acute enteritis affecting both the large and the small intestine occurred, and left behind them very little *post-mortem* evidence of their occurrence. In making *post-mortem* examinations on children who died of summer diarrhœa it might be extremely difficult, without the clinical history, to say what the nature of the disease had been. But Dr. Cautley's specimens showed that there was some very definite and obvious change in the large intestine, and the fact that that change was confined to the large intestine was interesting in regard to the occurrence of true ulcerative colitis, where there was extensive destruction of the mucous membrane of the large intestine, which he believed to be very uncommon in children, but more common in young adults. It was not correct to say that ulcerative colitis was confined to the colon, though this might seem an Irishism, but he had made *post mortems* of cases of ulcerative colitis in which the inflammation occurred also in the ileum. Perhaps the suggestion made by Mr. Wallis as to the difference in the nature of the contents of the small and large intestines had something to do with that. Dr. Cautley mentioned that in his cases the stools were frequently green. That, he thought, pointed in the direction of there being some catarrhal affection of the small intestine as well as of the large. It was also remarkable that there was very little tenderness in the cases. He asked Dr. Cautley whether he had any experience of the treatment of such cases by the use of creosote and castor oil. He stated that salicylate of bismuth was the drug which had given most benefit. If that disease was due to any micro-organism acting on the large intestine, it would be interesting to hear whether creosote had been used, and with what results.

Dr. CAUTLEY, in reply, said it was extraordinary how extremely slight the local signs were, and yet one could not regard the condition as purely due to a general infection. No doubt the children died from the general

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infection, but there was very extensive local mischief. In the colon which he had brought for inspection, the whole of that viscus was involved, and very extensively. That would lead one to expect that there had been definite local tenderness, but as a matter of fact none was present. In the case of the family he narrated as instances of probably direct infection, there was the mother, a child, and an infant. The child's attack began first, next the infant's, then the mother's. The explanation that the infant might have contracted the disease from the breast was a possible one, but the infant's illness began before the mother's and after the child's, and the child was nursed by the mother. He had no doubt that the infant caught it by direct infection through lack of cleanliness on the part of the mother while attending to the child, and that the mother caught it from the two combined. Why the disease was limited to the colon he could not definitely say. Mr. Wallis's explanation sounded plausible, but did not apply completely, because the disease was not limited to the colon—there was a certain amount of change also in the ileum. In both cases there were patches of acute catarrhal inflammation of the ileum, and in the sections placed under the microscope for the inspection of Fellows the epithelium could be seen to be completely denuded. The main stress of the disease fell upon the colon, and the most likely explanation was that the infected contents of the intestinal tract rapidly passed over the ileum, but stayed much longer in the colon, and consequently produced a more profound effect. No doubt if such cases were treated at the beginning, and the whole of the colon washed out, much good would be done. If the cases could be got early enough, the best treatment was free purgation to start with. Irrigation had been used and strongly recommended, but it was difficult to carry out successfully in children. When there was extensive disease such as he had shown, washing out simply affected the superficial contents of the large intestine, even if it could be carried out thoroughly. He doubted whether Mr. Wallis's suggested operation would produce results sufficiently beneficial to warrant its being carried out. The evidence, upon which he concluded that the vomiting was reflex or toxæmic in origin, was that in some of the cases, and particularly in one, although there was frequent vomiting, the tongue was clean ; and in both the cases which died no catarrh of the stomach nor of the upper part of the intestine was evident. The case of tuberculous ulceration of the ileum and colon to which he had referred was analogous in this respect, there was considerable vomiting, the tongue remained clean, and the child took its food well at times ; and similarly there was extensive ulceration of the ileum and the colon, and no affection of the stomach. He did not wish to say distinctly and positively that the vomiting was entirely reflex or entirely toxæmic. but he thought that a more probable explanation than to ascribe it to any affection of the stomach. He did not use creosote. It was a long way from the mouth to the colon, and he was guided in his treatment largely by the result of the first *post mortem*. He tried calomel and opium and a few other drugs, but it was the salicylate of bismuth which he found most beneficial. Probably there was a certain amount of virtue in the salicylate as an antiseptic. He found cocaine most useful for stopping the vomiting.

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REMARKS ON RHEUMATIC CHOREA: ITS VARIETIES AND THEIR TREATMENT.

By LEONARD GUTHRIE, M.A., M.D. Oxon., F.R.C.P. Lond.

IN this paper I shall deal chiefly with true or Sydenham's chorea, but it will be necessary to refer to habit chorea, because this is often confused with true chorea and may, indeed, accompany and complicate it. As the title of the paper shows, I regard true chorea as a rheumatic manifestation, and as such, it is a symptom rather than a disease. There is of course nothing original in such a view. In France it is, I believe, generally accepted. But, nevertheless, I believe I am right in stating that British authorities, generally, hold that cases of chorea due to fright are in a different category to those of rheumatic origin. For my part, I think that the causes of fright chorea and rheumatic chorea are the same in substance and by no means irreconcilable. The difficulty can, I think, be overcome if we consider what is meant by fright and what are its results.

Fright is only another name for shock. The results of shock, whether physical or mental, are the same. They are nervous prostration, lowered vitality, enfeebled circulation, disordered metabolism, and probably defective elimination. They may be due to actual injury or accident, or to emotion. The ill-effects of chill, or exposure to wet or cold, are identical with those of shock. Now, the symptoms of chorea at once suggest a history of fright, and those of articular rheumatism a history of exposure to bad weather; but I venture to think that, were the connection established, a history of fright in cases of rheumatic fever and a history of chill in cases of chorea would be equally forthcoming.

Instances of chorea and rheumatism following actual injury might be multiplied, and others might be adduced to support the contention that "shock," whether produced by emotion or chill, may cause both chorea and rheumatism.

But other important factors in the production of rheumatic chorea have to be considered. I do not think that shock alone is more than an exciting cause. There must be an individual susceptibility to the rheumatic poison in the first place, and in the second there must be some peculiar instability and weakness in

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the nervous motor elements. In addition to susceptibility to the rheumatic poison we must have the presence of the poison itself.

For a considerable time past rheumatism has been regarded as due to infection by micro-organisms. Quite recently support is given to such a view by the researches of Drs. Poynton and Alex. Paine ('Lancet,' May 4th, 1901, p. 1260, and March 23rd, 1901, p. 858), who have isolated from 14 cases of rheumatic fever a diplococcus which produced pericarditis, arthritis, pleurisy, and nodules in animals, and finally, in two cases, symptoms resembling those of human chorea.

Dana, Triboulet, Wasserman, Malkoff, and others seem to have isolated a similar diplococcus.

The *modus operandi* of shock in determining an attack of rheumatism or chorea has yet to be considered. Probably all of us entertain hosts of micro-organisms unawares. In some, the seed falls on good ground; in others, on fallow. We are told by pathologists that continuous warfare is waged by friendly phagocytes upon the hordes of microbes which beset us. The effects of shock, whether due to injury, chill, or emotion, are to lower the vitality and resisting power of our defenders and to give the battle to the marauders.

It must not be supposed that a definite history of a single shock is to be obtained in all cases of rheumatic chorea.

The results of repeated exposure to wet and cold may, like those of a single chill, result in articular rheumatism. In one case a long course of overwork and terrorism at school or at home culminates in chorea. In another, a similar result follows immediately on the bite of a dog or an alarm by fire.

The interval which often elapses between a shock of any kind and the onset of chorea does not disprove that the shock was a *vera causa*.

As regards the site of the lesion, much argument has been expended on the question whether chorea is a disease of the brain or of the spinal cord.

From indications afforded by the symptoms, it would seem that both are affected. The cortex appears to be essentially involved rather than other parts of the cerebrum, whilst in some cases there seems to be evidence of implication of various tracts in the spinal cord.

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Varieties of Rheumatic Chorea.

For purposes of convenience I should divide the varieties of chorea into two main groups :—

1. *Sthenic or explosive chorea*, in which the predominant characteristics are spontaneity, violence, persistence, and wide range of movements.
2. *Asthenic or pseudo-paralytic*, in which the movements are less in evidence, and there appears to be loss of muscular power, or, at all events, loss of will power to execute voluntary movements.

These two main groups may be further subdivided into "severe" and "mild."

The sthenic not infrequently becomes asthenic in type, but the opposite sequence is rarely seen.

Severe sthenic chorea is characterised by spontaneous, uncontrollable, violent, irregular movements of the limbs and whole body during rest, and by exaggeration of the movements on attempted voluntary action, and when the patient is under observation. The movements are not due to spasm of individual muscles, but to complicated involuntary actions of groups of muscles performed with unnecessary violence. The action of one group of muscles is continuously counteracted or replaced by the action of its opponent group. Often it seems as though an attempt were made to perform opposite and contrary movements at one and the same time. Attempted voluntary actions are accompanied and prevented by wild flourishes and jerky ataxy. It has been supposed that the performance of opposite or contrary actions is a voluntary attempt to counteract involuntary movements, but I am convinced that both alike are involuntary.

The facial contortions form an admirable physiological study of the expression of emotions. The expressions of gladness, sorrow, pain, pleasure, disgust, fright, contentment, &c., follow each other in rapid succession, and one fades into the other as in a dissolving view. Moreover, conflicting expressions occur simultaneously in different parts of the face.

Movements of the legs, like those of the arms, are violent, continuous, and conflicting. The child is unable to stand or walk, and when supported in the erect position the lower limbs are

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thrown about as in the most extreme form of locomotor ataxy, or rather of ataxic paraplegia, for the ataxy is often associated with spastic rigidity. In such severe cases the patient is never still for a moment, except during deep sleep; and sleep may be prevented or disturbed (when not profound) by involuntary movements.

Speech is frequently indistinct from incoordination and spasm of muscles concerned in articulation and respiration. But complete mutism is uncommon.

Mental symptoms are not generally pronounced, but there may be great irritability and fretfulness.

The sthenic variety may be regarded as an indication of spontaneous explosiveness of the motor centres, with complete absence of inhibitory power. Its duration is seldom longer than two or three weeks. The patient may then sink into the asthenic condition, which will be presently described, or one or other of the sub-varieties of sthenic chorea makes its appearance.

Sub-varieties of Sthenic Chorea.—1. The spontaneous movements cease entirely so long as the child is at rest and unnoticed, but they return directly one looks at him or approaches the bedside. They also reappear on volitional actions. In this condition spontaneous explosiveness of motor centres has ceased, but they are readily excited, and there is still great want of inhibitory control.

2. The spontaneous movements cease, the limbs are flaccid whilst the child is at rest, but on handling them they become stiff and rigid, and there is considerable incoordination or attempted voluntary action.

A peculiarity of the knee-jerk is often present in such cases. This reflex is somewhat exaggerated, and on repeatedly tapping the tendon the limb gradually rises to a position of extreme extension, with general rigidity and inversion of the foot, and remains so for a few seconds before becoming flaccid again. A reflex somewhat akin to this has been recently described by Dr. W. Gordon ('British Medical Journal,' March 30th, 1901, p. 765) as "the hung up knee-jerk."

The condition, as a whole, strongly resembles that of ataxic paraplegia, and it may possibly be due to some passing affection of the postero-lateral columns.

But in some cases I am inclined to think that the rigidity is due to a conscious voluntary attempt to control involuntary movements. For the spontaneous movements will recur if the child's attention

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is distracted. For instance, the child can hold out its hands steadily though stiffly, but if then asked to put out its tongue the hands and fingers begin to twitch at once.

3. *Residual Chorea.*—There is a condition often protracted for an unlimited time in which spontaneous movements continue, and in which there is great clumsiness and ataxy in using the hands, and a shambling, awkward, blundering gait. The child is constantly falling about and bruising himself; he stoops or keeps one shoulder higher than the other. He is nevertheless in perfect health, and the condition may be described as "residual chorea," for the child can overcome all his symptoms by an effort of will. The chorea is cured but the symptoms still remain.

It must be mentioned that in all these cases chorea is frequently one-sided only.

Asthenic or Pseudo-Paralytic form of Chorea.

As mentioned before, this form commonly succeeds severe asthenic cases. In severe cases of asthenic chorea the patients are usually emaciated and prostrate. They lose all power of voluntary movements, and attempts to execute them only result in slight twists or shrugs of the whole body. There are seldom any facial contortions, but the expression is wild or imbecile. There is often well-marked retraction of the upper eyelid (Stellwag's sign), and the lips are constantly pursed and pouting.

Often the tongue cannot be protruded, and speech is entirely lost. Not a word may be uttered for weeks together, and it does not appear that any attempt to speak is made. Mania or dementia are not uncommon.

In the milder forms of asthenic cases movements are again less in evidence than in the sthenic cases. They have rarely been observed by the patient's relatives. The children are usually supposed to be paralysed, commonly in one arm. The limb hangs limp and flaccid at the side. The child makes no voluntary effort to use it, and when asked to do so the attempts are small, abortive, half-executed, and fail.

Wishing to grasp an object or to shake hands, the child advances his hand a little, but drops it again at his side without completing the desired act. Objects placed in his hand almost immediately fall on the floor. When the leg is affected it gives way under him whilst walking, or he drags it after him as if hemiplegic.

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Usually there is no rigidity nor ataxy, but simply weakness of the limb. But to this rule there are exceptions.

In the asthenic group of cases there seems to be inhibition of movement rather than want of inhibitory control. There is not the hyper-excitability of motor centres which marks the sthenic variety. The muscular wasting which occurs in these cases may point to implication of the anterior cornual cells, just as the ataxy and rigidity present in the sthenic group afford evidence of involvement of the postero-lateral columns. As in the sthenic group, the types of the asthenic pass into each other. The milder forms may usher in or may mark the approach of the severe, or mildness may prevail throughout.

I cannot recall a case in which the asthenic type gave way to the sthenic, but have no doubt that the sequence may occur. One such instance, in which choreic movements manifested themselves after a week of apparent paralysis of all four limbs, occurred in the practice of Professor Clifford Allbutt at the Leeds Infirmary (Clifford Allbutt's 'System of Medicine,' vol. vii, p. 852).

Mixed Cases.—Not infrequently cases occur in which the sthenic and asthenic types of chorea are present simultaneously. Thus one arm may be paretic whilst the other exhibits choreic movements.

Habit Chorea.—This should be distinguished from "residual chorea" already mentioned, although the latter is chorea which has become habitual.

In habit chorea single muscles, in true chorea groups of muscles, are commonly affected by spasm. In habit chorea there is endless and rapid repetition of isolated spasmodic movements, *e.g.*, a series of lightning-like winks and rapid nods or grunts and sniffs. In true chorea the movements are constantly changing, alternating and clashing with each other. In habit chorea the child simply "pulls faces"; in true chorea the grimaces are exaggerations of normal expressions of emotion. So, again, the more complicated movements of habit chorea are meaningless tricks, gestures, and antics. In true chorea the movements are the normal primitive actions of flexion, rotation, extension, &c., though performed without object. In habit chorea the movements are always the same, in true chorea they are constantly changing.

The victims of habit chorea are emotional and hysterical children, often with neurotic family antecedents. The complaint is usually

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set up by reflex irritation of some kind or another, or by any surroundings or conditions which tend to lower general health.

As in true chorea fright is frequently the exciting cause. They do not, as a rule, show any tendency to rheumatic affections, though at times one meets with mixed cases of "habit" and rheumatic chorea.

Treatment.

Sthenic Cases (severe).—Absolute confinement to bed is essential. The bed should have padded sides in order to prevent the patient from hurting himself or falling out. It is often necessary to protect bony projections by cotton wool packing. Carefully applied splints to both arms and legs are sometimes useful.

Chloral hydrate is the most valuable remedy for such cases. It must be pushed until natural sleep is procured. Sometimes 5-grain doses, thrice daily, are sufficient (for a child of 5 or 6), but it is usually necessary to increase the dose and to give it every four hours in order to bring the patient fully under its influence; 10 to 15 grains as a dose may thus be given to a child aged 8 or 10. The bromides seem less serviceable alone, but may be combined with choral, and they are best administered per rectum.

The pulse and heart should be carefully watched whilst the patient is under chloral, and if they show signs of failure, brandy and digitalis, strophanthus or caffein should be given.

The tincture of cactus grandiflorus, in doses of 2 or 3 minims, is useful when there is much cardiac disturbance or feebleness without definite signs of endocarditis. In very severe cases, in which even chloral hydrate fails to procure rest and sleep, inhalation of chloroform may be necessary. In milder sthenic cases other nerve sedatives are of use. Antipyrin, in doses of 3 to 5 grains, for a child aged between 5 and 8 is often efficacious, as also is monobromide of camphor, 1 to 4 grains three times daily with liquorice powder. Extract physostigmatis, $\frac{1}{20}$ to $\frac{1}{6}$ grain, with ext. cannabis indica, $\frac{1}{3}$ to $\frac{1}{2}$ grain, have been used and with good effect.

The Use of Arsenic.—It is to be regretted, I think, that the Newcastle quack who confessed on his deathbed* that his chorea cure contained large quantities of arsenic, did not die impenitent. Had he merely confessed to spells and incantations he would not have

* Dr. W. Murray, 'Rough Notes on Remedies,' p. 17. 3rd ed., 1899.

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done much harm. But, as Voltaire said, "Spells and incantations, when combined with a sufficiency of arsenic, may destroy whole flocks of sheep."

I do not know how many choreic human sheep have been actually destroyed by arsenic, but I do know that many have been rendered extremely ill thereby. I believe that the practice of pushing arsenic until what are euphemistically called "constitutional symptoms" ensue, is mischievous, useless, and unjustifiable. Arsenic in poisonous doses is in no sense a specific for chorea. Yet it is an undoubted fact that choreic movements sometimes cease by the time that the accumulative treatment by arsenic has reached its height. What is the explanation? Dr. Rolleston asks, "Does arsenic cure chorea because it makes the patient ill in another way, and unable to manifest the original disease?"* I deny that, given in this way, arsenic cures chorea at all, and I think the real explanation is that in such cases the sthenic form of chorea has given way to the asthenic, as commonly happens when arsenic has not been administered. The choreic movements have ceased, but the disease is in no sense cured, and arsenical poisoning may be superadded to the original complaint. In cases where enormous doses of the drug seem to be taken with impunity, it may be that they have not been absorbed. The rapid emaciation which often accompanies severe chorea shows that absorption is at a low ebb. In some cases symptoms may not disclose themselves until a fortnight has elapsed since the medicine was stopped (Railton, 'Medical Chronicle,' February, 1900). Although I am strongly opposed to the routine treatment of chorea by heroic doses of arsenic, I yet believe that, given in ordinary amount, it is most valuable in all mild cases.

Salicylates.—One argument against the rheumatic origin of chorea has been that the movements do not seem to be checked by salicylates. This is not altogether true. I have found salicylates as beneficial in relieving the pains of chorea as the pains in ordinary articular rheumatism, and with the relief of pain the course and severity of the chorea is lessened.

Some deny that salicylates have any effect in shortening the duration of rheumatic fever. But the majority will admit, I think, that pain and swelling of the joints which had entirely ceased

* 'Some Remarks on the Uses and Abuses of Arsenic Treatment,' April, 1901, p. 83.

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under salicylates often return directly the drug is withheld. In many cases of chorea there is evidence of disordered digestion, foul breath and tongue, loss of appetite, constipation, or diarrhœa. Salicylate of bismuth is useful in such cases, or salol in a castor oil emulsion after a dose of calomel.

Treatment of Sub-varieties of Sthenic Chorea.—The acute stage characterised by spontaneous movements seldom lasts longer than one or two weeks. At the end of this time the asthenic condition or one of the sub-varieties of the sthenic makes its appearance. The sub-varieties may linger on indefinitely for many weeks or months, and the condition may in rare instances become chronic, unless appropriate treatment is adopted.

The methods of treatment are "suggestion," physical exercises, and rest, combined or used singly.

Suggestion (by which is not meant hypnotism) is useful in cases where movements only occur when notice is taken of the child, and on attempted voluntary action. Such children are naturally timid and self-conscious, and they require much patience, gentleness, and encouragement for their management.

1. Suggestions that the child should lie quietly should be repeated in the soothing manner used by the hypnotist. At the same time the flourishes and wriggles should be gently restrained, and the child will soon learn to lie completely relaxed and flaccid under observation, which is the first step gained.

2. *Passive Movements combined with Suggestion.*—It will be found that choreic movements occur directly the child's limbs are manipulated. To correct this condition the patient's hand should be placed between the observer's hands, and raised and moved in various directions, suggestion being made meanwhile that the child should keep its own hand quite still. At first it will be snatched away and flourished as usual, but soon the patient learns to control the involuntary movement by an effort of will which makes the whole limb rigid. This is an indication of improvement, though by no means of a cure; but by degrees the child discovers that its efforts to control involuntary movements need not be so strenuous whilst its limbs are guided and restrained, and accordingly the rigidity becomes relaxed. The measure of improvement is easily ascertained by the observer. Until the limbs can be passively moved freely in all directions without exciting either rigidity or spasm no other than passive exercises should be employed.

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3. *Voluntary Movements under Guidance.*—The patient is then directed to perform the same movements as have been passively executed, whilst his hand is still controlled, guided, and helped by the observer.

4. When this can be done without exciting spasms or rigidity, but not before, *voluntary movements without control*, in imitation of the observer's, should be practised.

The movements should be of the simplest character at first, and gradually made more elaborate. They should be executed slowly and steadily without jerks and flourishes. The chief difficulty is, at this stage, incoordination rather than spasm, and the mode of treatment is adapted from Frenkel's system in the case of locomotor ataxy.

Elaborate apparatus is unnecessary. Simply bringing the fingers together from a distance and touching various parts of the body with them are admirable exercises. Precision of movement can be gained and the child kept amused by various toys and games. The kindergarten supplies simple and cheap apparatus which answer the purpose. Coloured balls hung by strings on a frame or strung on wires can be used. The balls can be made to swing, touched, and arranged in patterns under direction. Then solid squares or cubes can be built in various shapes and forms. Such games as draughts, dominoes, or solitaires can be used for older children, or "spilikins" (easily improvised with a box of matches), pegs to be fixed in the holes on a backgammon board, can be pressed into service. A child may usually be considered cured when it can build a two-storied house of cards.

The aim of exercises is to encourage freedom as well as precision in movement. For this reason it is inadvisable to allow the patient to write or thread needles or to sew. All these actions require much mental concentration, fixation, and tension of the various muscles employed. There is no objection to freehand drawing on a slate or blackboard, and paper plaiting or weaving may be encouraged. It is important that all exercises should be carried out under supervision, otherwise the child becomes careless and ceases to take any trouble provided that it can amuse itself, and if neglected often drifts into what I have called "Residual Chorea." The treatment in this event is by a course of drilling, marching, wheeling, and standing at attention at word of command in particular, for the child's chief faults are inattention and carelessness,

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which have to be overcome. Ordinary calisthenic exercises are also useful in these cases.

The treatment of the lower extremities is on the same principles as that of the upper. The patient should not be allowed to stand, or try to walk until all movements of the legs can be executed with fair precision whilst lying down. Such ataxy as still remains should be treated by making the child stand supported by the back of a chair whilst it places each foot separately in various positions. I usually scatter wooden curtain rings on the floor and instruct the patient to tread on them, one at a time. The rungs of the chair may also be used for exercises in mounting.

I have only attempted to indicate the line of treatment which I have found useful. The principles are:—(1) That suggestion is of service where there is lack of inhibitory control over choreic movements. (2) Inhibition when acquired is often exaggerated, and has to be regulated by assistance before voluntary movements can be executed. (3) Incoordination has to be treated by exercises carefully graduated in the order of difficulty in their accomplishment.

Treatment by Rest.—In all primary attacks the patients should be absolutely confined to bed. This should be the rule even in mild cases, for they may quickly become severe. The rule is well recognised in cases of articular rheumatism, and should be equally so in chorea, for in both the onset of endocarditis is to be feared. Endocarditis may be arrested or even staved off by enforced rest. The length of time during which confinement to bed is necessary varies according to circumstances. As a general rule no attempt should be made to get the patient out of bed until all spontaneous movements have ceased for at least a week. Also the period of rest depends on the extent to which the heart is implicated. A rapid or irregular pulse, signs of cardiac enlargement, and the presence of shifting bruits, are indications of active heart mischief and of the necessity for prolonged rest. So much importance need not be attached to the presence of simple mitral regurgitant bruits, unless of recent origin, and provided that other signs of heart disease are absent. In mild cases of recurrent attacks the rule is not so absolute. Rest in bed for a week or two is often sufficient, and then the child may be allowed up for one hour or so out of every three or four. The child's own inclinations in the matter

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should be consulted. If it frets and rebels at enforced rest it is best to humour it within reasonable limits.

A child may often be in perfect health although suffering from "Residual Chorea," and such cases do not require treatment by rest. The treatment by rest may, in fact, be overdone. I have often noticed that children who have been kept in bed for many weeks on account of slight rises of temperature and rapid pulse improve at once when allowed to get up. This applies to convalescence from diseases other than chorea.

Treatment of Asthenic Chorea.—The treatment should be recuperative and stimulant rather than sedative. In severe cases, which, as previously mentioned, are commonly the result of equally severe asthenic chorea, absolute rest in bed is essential, with an abundant and nutritious diet. Brandy should be given freely; 4 to 6 ounces in 24 hours are not too much, in extreme cases, for a child of 8 to 10 years of age. It is of course necessary to reduce the amount as soon as improvement commences, otherwise a low state of semi-stupor, with delirium, furred tongue, and subnormal temperature, is apt to be induced. A similar condition of alcoholism sometimes delays convalescence from enteric fever in children. I have known it regarded as an indication for giving more stimulants; but, on the contrary, less should be supplied.

Quinine, which in the sthenic cases seems to aggravate the condition as it often does in epilepsy, is useful in asthenic chorea. Salicylate of quinine, when there are muscular pains, cod-liver oil and maltine, nux vomica, and iron when anæmia is present, are better remedies than bromides and sedatives. Arsenic in small doses seems to be always beneficial. There is usually much prostration and emaciation. Massage and mild galvanism (not faradism) will improve the general nutrition.

Passive movements, and exercises under guidance and without, are as useful in these cases as in the sthenic sub-varieties. But the *rationale* is somewhat different; for in asthenic cases voluntary movements are not so much hindered by spasms and ataxy as by inhibition of will power. Thus one has to teach the patient to use his limbs little by little, just as one coaxes a patient suffering from hysterical paralysis to do so. The milder asthenic cases require treatment on similar lines, namely, tonics, exercises, massage, and prescribed amounts of rest in bed. Like cases of residual chorea, they are apt to be very tedious and even chronic unless taken in hand.

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Reflex Chorea.—As may be gathered from preceding remarks, I believe that any condition which lowers general health may favour the flourishing of the diplococcus rheumaticus, and so give rise to chorea. Hence in every case of chorea the presence of errors of refraction, naso-pharyngeal diseases, defective teeth, gastro-intestinal disturbance, parasites both internal and external, genito-urinary affections, and all sources of mental distress, must be sought and treated or removed if found. I do not contend that immediate relief is thereby procured, but so long as such conditions exist, the course of chorea may be protracted.

In conclusion, it may be hoped that the discovery of the diplococcus rheumaticus will lead ere long to the finding of its antitoxin. This will mean a new era of treatment, rendering all present methods antiquated, yet not, I think, entirely obsolete.

Dr. CAUTLEY said he was inclined to associate himself with Dr. Guthrie and Voltaire in condemning the use of arsenic as at present employed. He would like to ask whether Dr. Guthrie had had any experience of giving arsenic in large doses for a short period, starting with large doses. Dr. Guthrie's description of the treatment was very admirable, but it seemed more suited to the rich, those who could afford skilled nurses and skilled medical attendants, than for hospital cases. What was required was treatment available for hospitals which would enable cases to be cured more rapidly. He would like to accompany Dr. Guthrie to see his method of suggestion. His own experience of that was not very encouraging. He agreed that not enough attention was paid to training choreic children on the physical side during the convalescent stage of the illness. Such training required very great patience and perseverance.

Dr. CHAPMAN gave an instance of suggestion being successfully practised on animals. He asked at what age Dr. Guthrie gave 6 to 8 ounce doses of brandy to children.

Dr. ALEX. MORISON said he regretted that the time was too short to do justice to Dr. Guthrie's admirable paper. With reference to the incidence of endocarditis in choreic cases, he would like to know whether Dr. Guthrie had noticed any difference in the general type of the cases in which endocarditis manifested itself, and those in which it did not. His own experience was that those curious fatuous aphasic cases, which were exceedingly tedious in treatment and associated with muscular prostration, were those in which, notwithstanding their apparent gravity and their long duration, endocarditis did not appear to be so common as in other cases. With regard to the use of arsenic, he endorsed Dr. Guthrie's statement as to its pernicious influence, especially in large and long-continued doses. Terrible cases of peripheral neuritis were caused by such treatment, but, given in a more moderate manner, arsenic was a proper stimulant, especially in asthenic cases.

Dr. VOELCKER agreed that the interest of the paper consisted chiefly in the treatment. But as rational treatment was based on the view held of the pathology of the disease, he thought it was important to come to a correct view as to the pathology of chorea because on that the treatment

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would depend. Dr. Guthrie appeared to regard the active forms of chorea as the result of a rheumatic poison acting on the cells, and directly producing over-activity of those cells. A more rational view appeared to him to be that the effect of the rheumatic poison was to remove the inhibition which was known to exist in the normal state in the higher cortical centres, and the choreic movements themselves were the expression of the removal of that restraint. If so, educating a child in movements, such as building up bricks, and other mechanical movements, was hardly the right way of attacking chorea. It seemed much more reasonable for such a child to rest, and thus build up its nervous system, to get rid of the rheumatic poison, rather than to specially use an already exhausted group of nerve cells. He agreed that in the cases which Dr. Guthrie had termed residual chorea such a line of treatment by exercises and the kindergarten practices might be excellent. In the severe cases it did not seem right to persevere in trying to make a child do what it was not capable of doing, the repeated disappointments were sure to be detrimental to the child's condition. With regard to treatment by different drugs, when he was registrar at the Great Ormond Street Children's Hospital he had opportunities of watching different forms of treatment. In one ward arsenic was used extensively for chorea, in another nothing was done beyond rest and feeding, and in another passive movements and douching were practised. The cases went out of one ward as quickly as out of the others. He could not say he believed in large doses of arsenic, still he had some superstition or reverence for the drug which made him give it in small doses, and he believed it was beneficial in cutting short the course of the disease.

Dr. GUTHRIE, in reply, said he would answer Dr. Cautley's question by saying that he had seen large doses of arsenic given, with the result that the child was violently sick, it had violent diarrhœa, and its appetite was destroyed. Probably it was beneficial for the child to be sick, because by that means it would bring up the arsenic, and avoid peripheral neuritis later. Dr. Cautley had also suggested that the lines of treatment mentioned in the paper were more suitable for private practice than in hospital. He agreed with that in one way, but his experience was that it was even more difficult to get one's wishes carried out in private houses than in hospital, in which latter case one was aided by skilled and conscientious nurses. At home, children were spoilt and it was very difficult to get the treatment consistently carried out. He had ordered in private practice that a child should be kept quiet in bed, but incidentally learnt that it had been engaged all day in wheeling a heavy iron train up and down the bed. With regard to suggestion, he felt certain that in a certain stage of chorea suggestion could be carried out easily. He did not attempt it in severe cases, for the latter were best treated by entire rest. In answer to Dr. Chapman, he only gave such large doses of brandy in very bad cases, and then with children of 8 or 10 years of age he had no hesitation in giving 4 or 6 ounces. But it was necessary to watch such cases, otherwise they might get into a state of stupor, with furred tongue, and might become delirious, or even in a state of chronic alcoholism. In answer to Dr. Morison as to the occurrence of endocarditis in different types of cases, that disease was not so often met with in the asthenic cases as in the sthenic cases. Rheumatism manifested itself in various ways in different subjects: one child had arthritis, another sore throat and erythemata, others endocarditis, others nodules, others chorea. So children with bad asthenic chorea generally escaped endocarditis. Dr. Voelcker suggested that treatment by exercise

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was not correct for children with exhausted nervous centres, and with lack of inhibition. But, as he had stated in his paper, he did not use any form of treatment for the severe cases, only for those convalescing. He was sure chorea became a habit with children, and remained for a considerable time after the disease was cured. It was essential to watch such children, and to avoid tiring them, and then he did not see why they should not perform certain easy exercises. He fully agreed that these should be done gradually, and that they should be so graduated as not to be too difficult of accomplishment.

May 20th, 1901.

THE ANNUAL ORATION—"SOME LANDMARKS IN THE PROGRESS OF MEDICAL SCIENCE."

By F. RICHARDSON CROSS, M.B. Lond., F.R.C.S. Eng.

MR. PRESIDENT AND GENTLEMEN,—I am deeply conscious of the compliment paid me by you, Sir, and the Committee of the distinguished and ancient Medical Society of London, in adding me to the list of eminent men who have filled the honourable office of Orator to the Society, and I am grateful to my old friends and their colleagues for their kind memory of me for this enviable position.

But now that the time has arrived for me to fulfil the obligation that the compliment entails, I feel that the proper performance of the duties I have undertaken demands knowledge and abilities that I do not possess, and that I can scarcely hope to satisfactorily follow in the footsteps of my distinguished predecessors.

During the year that I have been in office in the Medical Society we have passed out of one century into another, and standing on the threshold of the twentieth century one cannot resist dwelling on the element of time—on the century just past, and on the many preceding ones that have rolled away, leaving more or less of their records with us—and on the one that lies before us impenetrable, unknown, but full of hope.

Almost synchronous with the close of the nineteenth century there ended another great chronological period—the longest, the most prosperous, and the most remarkable one in the history of the British Empire—the Victorian era.

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The Queen on her accession had just completed her eighteenth year, and was thus old enough to escape a regency. It was a most critical period in the history of this country and of Europe. The Reform Bill had not long been passed (a final and irrevocable settlement of a great constitutional question, which had almost embarked the country in a civil war). Disgraceful riots had followed the earlier rejection of the Bill by the House of Lords; London had been fairly well protected by the new police force of Sir Robert Peel, but at Nottingham, Derby, Bristol, and other large towns, castles and public buildings had been demolished, jails forced, and hundreds of people had been killed and injured. Ireland was under martial law, and Canada was on the eve of insurrection. The recent abolition of slavery was producing results unsatisfactory whether from the standpoint of humanity or of policy. Almost every institution in the country seemed insecure. The poor demoralised people were overcrowded, starved, almost uncared for. The Corn Law imposed a duty on the importation of foreign grain, which amounted almost literally to a prohibition. (It was lawful to export wheat on payment of 1*s.* a quarter customs duty, but no foreign grain could be imported until the price of our own wheat at home had risen to 80*s.* a quarter.) The poor man, though not much of a political economist, knew when his bread was too dear, and he knew that its price was kept up, by law, for the benefit of the corn-grower. Riots were occurring from time to time—very serious riots in some places. It was in these stormy times that the young Queen Victoria, then quite inexperienced in public affairs, but possessing a fine mental aptitude which had been well cultured and trained for its future work, took up the burden of royalty. She laboured constantly in studying the interests and welfare of her people; she entered into their feelings. Her royal life was not one of ease and pleasure; her many sorrows and many losses perhaps widened that sympathy which she so constantly extended even to the humblest of her subjects, and which made her an object of love as well as of honour in every home. She endeared herself to her people by her character (built up by good acts performed from day to day, strengthened and matured as years went by), and by consistency, sincerity, and goodness. Her strong sense of duty and self-sacrifice and her power of work were associated with kind tact and judgment, and with a personal knowledge of affairs of State perhaps unique in the history of the world.

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For sixty-three years her influence had been ceaselessly directed to uplift and purify the life of the nation. She had given the throne an influence it had never possessed before, and throughout the widespread territory of the British Empire (in Canada and Australia, in India and South Africa) it is our Sovereign who is the living symbol of the unity of the whole to-day. Reigning to the end without any loss of interest or prestige, she will continue to live in the undying reverence and affection of her former subjects.

Gentlemen, we have been living in an age crowded with great achievements in art, literature, and science, and have experienced innumerable applications of them in all departments of human industry; among the gains of the last century were railways, steamships, gas, the electric light, telegraphy, the telephone, the phonograph, photography, and spectrum analysis, while anæsthetics, antiseptics, and the Röntgen rays are indications of a conterminous advance in the science of surgery. The enormous gains in knowledge and the progressive great development in practice of all branches of the healing art, and of its associate sciences, were admirably set forth by many writers at the time of Queen Victoria's jubilee.

In seeking for the subject-matter of an address suitable for such an occasion as the present, I have been much interested to see, by means of a list kindly lent me by Mr. Hall, on what themes former Orators may have spoken. Many have passed in review various phases in the history of our Society itself; others have dealt with the principles that regulate medical knowledge or practice, and the inquiries that have led to their development. "The Vocation of the Medical Scholar" and "The Medical Profession in its relation to Society and the State" have been ably discussed. Some of the Orations have been of a philosophic character, others have been devoted to the consideration of special diseases. All kinds of subjects have been chosen by my distinguished predecessors. The very width of choice open to us renders selection none the easier.

To look back twice as far in time as the Victorian era, we see, in 1773, 90 doctors—physicians, surgeons, and apothecaries equally represented—meeting at Lettsom's house to found the Medical Society of London. We trace the history of the Society through its migrations thence to Crane Court (1776), to Bolt Court, Fleet

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Street (1788), on to George Street, Hanover Square, which was taken in 1850. (By that time the Medical Society had somewhat degenerated, but it then gained new power through an amalgamation with the Westminster Medical Society,* and in that same year the Lettsomian Lectureship was inaugurated.) At the completion of a 21 years' lease the Society removed from George Street to its present home in 1871, nearly 100 years after the first meeting at Lettsom's house.

One is tempted to dwell upon some of the incidents that have occurred in the history of the Society or in the lives of some of its best known members, and to inquire what advance has our science made since the Medical Society of London was founded? What part has the Society played collectively, or by its individual members, in the progress that has taken place? Or what opportunities have been lost of doing more? The story is already told in past memoirs, transactions, and proceedings, and by the Orations of Dr. John Sims, Dr. Routh, Sir Duncan Gibb, Mr. Edmund Owen, and others. Nor shall I allude to the progress in medicine and the allied sciences made in the last century or in the one preceding it, for the Presidential address of Dr. Roberts and the Oration of Dr. Kingston Fowler have occupied this ground.

Or in looking forward: What is the best use we can now make of so well-managed, so popular, so learned, so experienced a corporation as this is in the improvement of professional relationships and feeling, or in the leading forward of medical thought, and in making sure the pathways of science, not for ourselves only, but for those who are to follow after us?

Towards the future we can only speculate. From the past we can listen, read, and learn. In the present we can observe and think.

Speculation, mystery, and false philosophy have been great stumbling blocks in the way of the advance of wisdom. The foundations of medical science rest on the knowledge and sound reflections of experience, while independent accurate observation and cautious progress in deduction are the only reliable guides to its further progress.

* The "Westminster Medical Society" was founded in 1805 by Sir C. Mansfield Clarke and Sir Benjamin Brodie, and shortly after its foundation elected in a batch as honorary members the "Lyceum Medicum Londinensis," founded by John Hunter and Dr. Fordyce, 1785–1815.

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The study of systems in medicine is unproductive; all of them excepting homœopathy are gone; the maintenance of this one is illogical, and only a proof of ignorance or of deceit.

A retrospect of some of the great periods and of the principal actors in the course of the development of the science of medicine seems to be of interest, and I have found myself rapidly tracing some of the brooks and rivulets, from which the strong stream of medical science has gradually acquired its present force and magnitude. Where other forms of intellectual effort have grown more strongly medicine has also generally made more rapid headway, while conversely most forms of knowledge have usually degenerated all together. So where the streams of healing are broadest and most powerful the greatest peoples dwell upon their banks, which are covered with the intellectual efforts of literature and science, brightened by the pictures of the imagination, and coloured with art and poetry.*

The story of the early history of medicine is clouded in obscurity. The instinctive efforts of animals to relieve themselves of pain and suffering must in the case of primeval man have been improved on by superior intelligence and memory. It is said that the Egyptians and Babylonians exposed their sick in public so that any passer-by might give his aid by former personal experience, and those relieved were required to go to the temples and there record their symptoms and their cures.

Our knowledge of early Egyptian practice is derived from the 'Hermetic Books,' which possibly were not written until after the birth of Christ and of which the 'Papyrus Ebers' may have been one. Before Hippocrates, the Egyptian priest-physicians were the most famous. The sick seem to have attended at the temple, where they were relegated to some practitioner specially selected to attend on their particular malady. Ancient Egyptian instruments show that surgery was practised by them. The knowledge of medicine and surgery possessed by the Jews was probably learned in Egypt. Cleanliness was the guiding principle, and the regulations of Moses for the public health are of more than passing interest.

* Among the books which I have read with pleasure on this subject are Baas's 'Outlines of the History of Medicine,' Dr. Munk 'On the Royal College of Physicians,' and South's 'Craft of Surgery,' but I am particularly under obligation to Dr. Withington's 'Medical History from the Earliest Times' and to Dr. Roswell Park's 'History of Medicine,' from both of which I have liberally borrowed.

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The Indians found doctors among their priests and Brahmins. They were drawn from the higher castes, and were to be influenced by decorum, piety, benevolence, and unselfishness. They encouraged general knowledge, and said in proverb that "A physician who is no surgeon is like a bird but with one wing." Laparotomy appears to have been early practised by them for treatment of abdominal lesions.

The Persians and the Chinese can also claim a very early knowledge of and interest in medical practice.

But it is from Greece that the most valuable records of the early development of this subject reach us. Greece is the motherland of rational medicine, and she had probably made her superior knowledge of it felt in Persia, Egypt, and India before any records we possess upon medicine were written in any of those countries; and, moreover, from the time of Hippocrates to that of Harvey it is always the medicine of the Greeks that alone commands and deserves our thoughts, whether it seems to emanate from the schools of Alexandria, Rome, Bagdad, Salerno, or Paris.

The date of the revival of the Isthmian games, 776 B.C., separates the period of fable from that of recorded history in Greece, while practically the same date, 753 B.C., is given as that of the foundation of Rome by Romulus.

Homer (1250 B.C.) tells us of the Thessalian chieftain and blameless physician, Æsculapius, and of his sons, Machaon and Podalirius, who acted as surgeons in the Trojan War. Arctinus of Lesbos (B.C. 770), writing 500 years afterwards, assumes that Æsculapius was a deity, and writes "that he endowed one of his sons with nobler gifts than the other, for while to the one (Machaon) he gave skilful hands to draw out darts, make incisions, and heal sores and wounds, he placed in the heart of the other (Podalirius) all cunning to find out things invisible, and cure that which healed not"; a passage in which medicine and surgery are clearly separated.

With the rapid growth of the Greek colonies and the spread of Hellenic influence to the districts lining the shores of the Mediterranean the teaching of the followers of Æsculapius was widely distributed, and gradually there arose Æsclepiadæ, a medical caste, which became in places somewhat engrafted with priestcraft. Their temples were situated in fine health-giving situations or near springs of reputed medicinal value; pure air, mineral waters,

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and baths were aided by temperance in food and drink, and it would seem by purgatives, emetics, and blood letting. Faith that a cure would follow treatment was sometimes stimulated by religious services or strengthened by the mystic demonstrations of the oracles.

The teaching of Pythagoras (582 B.C.) raised a school of more philosophic medicine. Its practitioners were entirely separate from the priest service of Æsculapius, and the profession was open to every free-born citizen, who after a period of study was permitted to treat patients at his own house (*ἰατρειον*), or to visit them at their homes; they also travelled from city to city with this intention.

It would appear that from very early times the services of doctors were recognised as of high value for the welfare of the State. Many towns kept a physician for the public service; thus Herodotus mentions that the physician Democedes (B.C. 520), a pupil of Pythagoras, was chosen public medical officer at Ægina with a salary of a Talent (£240) per annum, an income far in excess of that received by an Athenian ambassador of those days. He afterwards went to Athens in the same capacity, and later received a salary of 2 Talents at Samos.

Xenophon in the 'Cyropœdeia' (362 B.C.) makes the model king to say that—having heard how cities which care for the health of their people elect public physicians, and how generals take surgeons with them for their troops—he has provided the most skilful doctors he can find for his army, whom he shall employ for his own wounded and also for those of the enemy.

Both surgery and medicine had attained considerable development when the master mind of Hippocrates (460 B.C.) gathered up what was already taught about them, rearranged what was best, and gave the future of these sciences a character and impress of his own.

One of the family of the Æsclepiadæ, this grand central figure of medical history, studied in Athens during the golden age of Pericles, the greatest statesman of ancient Greece, who not only aimed at making all the separate Hellenic states into one great nation, but succeeded in converting Athens, by its position and the beauty of its statuary and architecture, into the most glorious city of the ancient world. At that time there shone in Greece an extraordinary combination of men of genius—Anaxagoras, Socrates,

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Æschylus, Zeno the father of Logic, Herodotus the father of History, Euripides, Pindar, Phidias, and Myron.

On the island of Cos, where Hippocrates was born, and whither he returned to practise, was a temple already dedicated to Æsculapius. This he made the leading school of medicine of that time; but he also travelled to many foreign cities and practised there what he had preached at home, that careful observation and recorded facts were essential for wisdom in medical science.

He denied to disease a supernatural origin. "From God comes one disease as well as another, but nothing happens except in conformity with nature" (φύσις).

In medicine proper his method was threefold—to ascertain the past, to investigate the present, and to foretell the future of the patient. He took full notes of the clinical history of his cases, he observed all details of the patient's appearance and condition, and he insisted on the necessity for studying every symptom of the disease. He thus made the study of medicine accurate and objective, and quite separated it from the theories of pure philosophy. He reminds philosophers that the nature of man cannot be well known without the aid of medical observation, and that nothing ought to be assumed as to that nature until the evidence of the senses has confirmed it to be true. He described the lighting and the appliances necessary for the doctor's consulting room, the duties of the assistant, and the essential preparations for successful operation; the instruments, splints, and bandages. His knowledge of the diagnosis and treatment of surgical injuries and diseases is little short of marvellous when we remember how superficial and incorrect was his acquaintance with anatomy, for the Greeks religiously guarded the bodies of the dead and forbade examination of them. The Greek surgeons, however, lost no opportunity of perfecting their knowledge of wounds and accidents on the battlefield, on shipboard, in gymnastic and athletic contests, or in building operations.

The best of his followers aimed at a knowledge of anatomy and physiology as a basis of medicine.

The divine Plato (427 B.C.), who was a pupil of Socrates, must have come under the influence of Hippocrates. The method of this noblest of philosophers was one not of mere intellectual speculation, but a habit of mind and a plan for living; he

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preferred, however, the theories of philosophic deduction to the realities of Nature (about which at that time it must be admitted very little was known). He approached the study of disease by intuition rather than by observation, and from his criticisms seems to have had but a poor opinion of physicians and of their work, though he introduces one into the select party of the Symposium.

Aristotle (384 B.C.), the pupil of Plato, was a member of a medical family. Educated as a physician, he possessed the mental habits of a man of science, and his breadth of culture covered an all-embracing range of subjects. An accurate observer, he became the greatest naturalist of antiquity. He created a system of comparative anatomy and physiology by the dissection of animals, and the plans and methods of his classification were so perfect that they were closely copied two thousand years afterwards by Cuvier. He was a prolific writer, and his teachings applied the ideal doctrines of Plato to the realities of natural phenomena. Though he never made dissections on human bodies, he was the founder of anatomy and the pioneer of the Anatomical School of Alexandria.

His influence on the development of medicine was perhaps chiefly due to the great part played by one of his pupils in the history of the world.

Philip, of Macedon, a province hitherto considered barbarian by the other Hellenic States, had gradually become (338 B.C.) the master of the whole of Greece. He was a lover of learning and a liberal supporter of learned men. On his death he was succeeded by Alexander the Great (356 B.C.). Great Philip's greater son had been educated by Aristotle, and with his victories spread the language and civilisation of Greece over Persia, which contained the old Indian, Babylonian, Assyrian, and Chaldean civilisations, and over a great part of the Eastern world. Thus Egypt passed under Greek rule, the language of its government, its administration, and its education became essentially Greek. Alexandria was made the capital of the new empire, and soon attracted to itself representatives of all other nationalities besides Greeks and Egyptians, while a very large number of Jews were brought from Palestine to people the city, which rapidly rose to be a leading centre of learning, civilisation, and refinement.

After the death of Alexander the Macedonian empire was divided among his generals, and Egypt came into the hands of Ptolemy I, who established Alexandria as his seat of government. The situation

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of this city at the point of junction between the East and West rendered it the centre of the commerce of the world, and raised it to the highest degree of prosperity; it long remained a leading seaport, particularly for the distribution of corn. Alexandria became the residence of this family of Macedonian kings of Egypt, whose court was always a great centre of learning and philosophy.

The Ptolemies Soter and Philadelphus founded the Alexandrian Library and Museum. Books were bought or copied and put into the library, which became the storehouse of the collected literature of Rome, Greece, India, and Egypt; continually added to and improved, it afforded to the citizens an easy pathway into the knowledge of literature and science as it then existed. Destroyed by fire at the siege of Alexandria by Julius Cæsar, a part was replaced by the library of Pergamos, which had been founded by Eumenes, another general of Alexander, and which was presented to Cleopatra, the last of the Ptolemies, by Marc Antony.

For many centuries the Alexandrian school was the focus of the intellectual life of the world. It was the great centre of Greek learning, literature, and science, a knowledge of which spread thence over every existing civilisation.

The tendency of its professors was to reject efforts of imagination in order to rely upon the study of observed facts: they enforced the principle that the proper method of studying nature is by experimental interrogation. The school contained the four faculties of literature, mathematics, astronomy, and medicine. Eratosthenes (276 B.C.) was one of its earlier librarians, and Euclid (300 B.C.) was the founder of its school of mathematics. Students flocked to it from all countries for instruction hitherto impossible in the history of the human race.

Our interest chiefly centres in the school of medicine, where, in spite of the prejudices of the age, particularly of the Egyptians, anatomy was for the first time systematically studied by means of dissection on dead human bodies.

Erasistratus (the grandson of Aristotle) and Herophilus were its most distinguished workers in anatomy (about 300 B.C.). It is said that they were even allowed to open the cavities of the scarcely dead bodies of executed criminals for purposes of physiological discovery. They greatly advanced the knowledge of anatomy, particularly that of the brain and nervous system (they noticed the complexity of the convolutions of the grey matter, that they

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were greatest in man, and that they seemed to be to some extent a measure of the intelligence), and of the heart and pulse, and gave an extraordinary impulse to the sciences of surgery and medicine.

Philoxenus, a voluminous writer, and largely quoted by Celsus, is the most celebrated surgeon of Alexandria, while Ammonius, the lithotomist, practised crushing of the stone in many cases.

The Dogmatic, or Rational school of Hippocrates, and of the Alexandrian anatomists, realised that medicine, as a science, must be based on a knowledge of anatomy and physiology, but in accordance with the habit of the learned men of the day they unhappily tried to formulate theories of disease far in advance of any facts of these subjects, indeed before any real knowledge of physiology existed.

The Empirics and Methodists, on the contrary, scorned anatomy and rejected the dogmatic teachings, such as they were, of physiology and pathology. They argued:—"It is not the cause, but the cure of the disease that concerns us; not how we digest, but what is digestible. A person is ill, has unpleasant symptoms, surely the first thing to do is to find something that will remove them."

Thus the art of healing was by them reduced to a mere system of therapeutics; one of their most deserving leaders was Heraclides of Tarentum (B.C. 230), a Greek physician who wrote a book on 'The Preparation and Preserving of Drugs,' collected from his own experience, in which he urges the great value of opium in various disorders; he made use of it in sleeplessness, cough, and cholera, and as poultices for painful ophthalmia.

Even in these early days there were not wanting educated men who realised that the truths, whether of philosophy or of medicine, were not entirely to be found in any existing systems. These so-called Eclectics saw that both Dogmatics and Empirics held some truths and some fallacies. They declined to follow definite rules, or to be guided by fixed principles. Despairing to obtain absolute truth, they attempted to reach the highest standard obtainable in their day by selecting what seemed best in already existing knowledge. But the Eclectics, too, in time established a school or system. They were tempted to write books and compilations upon what had been already done in medicine instead of aiming to still further improve and develop their practice by an objective study of the subject.

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The story of Cleopatra, the last of the Ptolemies (died 30 B.C.), reminds us how Alexandria came into the hands of the Romans, who a century earlier had destroyed the Achæan league, and had thus made themselves masters of Greece.

In the second century before Christ so widespread was the influence of Rome that the Mediterranean Sea might have been regarded as a Roman lake. Her control had spread all along it, from Syria and Egypt on the east to Spain on the west.

The higher culture of Greece and Alexandria permeated the city and stimulated an appreciation of the drama and of art, while it introduced Greek teachers of philosophy and literature, of science and medicine.

Marcius Portius Cato, the Censor (234 B.C.), strove with all his might to stem the tide of Greek refinement and luxury, and endeavoured to encourage a return to a simpler and stricter social life after the ancient Roman pattern. He was the first writer of good Latin prose, and in the 'De re Rustica,' he gives some useful surgical rules, doubtless drawn from his experience as a slave-owning patrician.

Archagathus, a Greek practitioner who came to Rome about 200 B.C., was so successful in his treatment of wounds, fractures, and dislocations that he was known as "Vulnerarius." He was allowed by the Senate to practise at a "taberna" in a much-frequented thoroughfare, but when he began to operate with the knife, his popularity fled, he was nicknamed "Carnifex," and had to leave the city.

The first physician of eminence who practised in Rome was a Greek, Asclepiades, from Bithynia, 128 B.C. He had studied philosophy and rhetoric at Athens, and possibly medicine at Alexandria. He advocated a mode of living conformably with nature, fresh air, exercise, moderation in diet, cleanliness, the use of the bath, and massage.

He applied to medicine the principles of the Greek philosopher, Epicurus (341 B.C.), whose views were being popularised by Lucretius, the Roman poet of the day, in the 'De Rerum Natura.' (Pleasure—that is freedom of the body from pain, and of the soul from anxiety—temperance, and simplicity of life.)

Asclepiades possessed all the personal attributes and culture likely to make him popular in a rich, aristocratic community, and he soon became the most successful fashionable physician of the

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day, and one of the best known members of the Roman Republic. He was on terms of intimate friendship with Cicero (106 B.C.) (whose thoughts and speculations were borrowed from the Greeks, though he clad them in a perfect style of Latin prose), and with him he probably discussed foreign travel, the philosophy of Epicurus, and Falernian wine; while at the villa of Lucullus at Tusculum, or at his house in Rome—the luxurious splendours of which have become proverbial—he mixed with artists, poets, and men of letters, and with all that was best in Roman society at a time which just preceded the richest period of its culture (the Augustan age), the brilliant days of Sallust, Livy, Virgil, Horace, and Ovid.

Asclepiades left behind him a number of worthless imitators who desired to be judged by the luxury and elegance they displayed rather than by the knowledge they possessed, and some more capable pupils, who strongly developed the methodic system, among whom Thessalus, who flourished under Nero, was a good practitioner. He advocated careful dieting and exercise, but so conceited was he of his knowledge of medicine that he called himself the Conqueror of Physicians.

In Rome medical men seem as a rule to have held but a poor social position, and most of them were foreigners or freedmen. The calling was considered unworthy of a Roman citizen, "though not dishonourable for those to whose social rank in life it was suited."

During the first century of the Christian era it is probable that the profession of medicine had begun to be recognised as of some importance, for Julius Cæsar granted citizenship to all the physicians practising in the city, perhaps in order that he might more readily obtain army doctors for his legions, in which none but citizens could serve. This improved status may have been further due partly to the high standard of education and ability possessed by the leading practitioners, but it is certain also that large incomes were being made by some of them, and this alone always commands respect.

But on the other hand, under the term Medicus all kinds of doctors, specialists, and quacks flourished. Ophthalmists, medical and surgical, were particularly active, and Galen, writing on diseases of the eye, declares that he thought it useless to treat the subject scientifically, for the oculists would not understand it, while Martial and the Satirists are very severe on this class of specialists, as indeed they are against the whole profession.

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By imperial edict, Archiatri—chief physicians—who had probably previously existed in Greece and Egypt, were selected, possibly after some sort of examination, and ameliorated the position of the medical profession. A few of them attended on the emperors (Palatini), others were appointed to the chief cities and neighbourhoods, while the Archiatri Populares had private practice, attended to the sick poor, and gave instruction on the medical sciences. The opportunities thus afforded to the most competent teachers for attracting pupils, and the foundation of learned societies (Schola Collegia), which included medical men, encouraged the development of educational centres for the study of medicine in various portions from the Roman Empire. At a later period those who were not members of the College of Archiatrio had no rights nor emoluments as practitioners of medicine.

In the Roman period the physician (Medicus Clinicus) and surgeon (Chirurgicus) seem to have been clearly distinguished. We may infer something of the practice of early Roman surgery from the bronze and iron instruments now resting in the Museo Nazionale at Naples, which were buried under the ashes of Pompeii when that city and Herculaneum disappeared under the eruption from Vesuvius in the year 79 A.D.

Several eminent Greek surgeons flourished in Rome about that time. One of these, Heliodorus, in speaking of his operations for hernia, says:—"We ligature the larger vessels, but as for the smaller ones we catch them and twist them many times in order to close their mouths," and in giving detailed directions as to the amputation of various limbs, he directs before operating to tie a ligature as tightly as possible above the point of amputation. Antyllus, a century later, described his well-known treatment for aneurysm, and tabulates the operations for cataract then in vogue much as we should do at present:—

(1) It may be simply depressed or couched (Egyptian); (2) it may be extracted entire; (3) the lens may be broken up and left to be absorbed; (4) the lens may be broken up and removed by suction (Persian).

Almost the only great medical author who wrote in Latin was Aulus Cornelius Celsus, about 50 A.D. A Roman patrician of very widespread knowledge, he shone in Rome about the same time as Martial, 30 A.D., and Quintillian, 35 A.D., Tacitus, 53 A.D., Juvenal,

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55 A.D., and the two Plinys, 23 A.D., and 62 A.D., who constituted what has been called the silver age of Latinity, and after whom, if we except the Vulgate, and the writings of the Latin Fathers on theology, Latin literature almost died out until its revival at the Renaissance.

The 'De Medicina' of Celsus was probably written from the point of view of a rich man who desired to know everything that related to the management of his estates and the well-being of his slaves and dependents. He was well versed in all the knowledge of his day, and his writings exerted a great influence long afterwards. His is the greatest name associated with Roman surgery, but it is doubtful if he ever operated, or indeed if he was a doctor at all. His Latin was clear and forcible, but influenced by Græcisms; like Hippocrates, he bases medicine on anatomy and the scientific investigation of the causes of disease, while without excluding what is hypothetical he allows no hypothesis to influence practice.

His writings are of the greatest value from an historical standpoint as the source from which we have a knowledge of the Alexandrian period, and of earlier developments in medical science.

During the second century of the Christian era Rome enjoyed a happy period of beneficent rule, but in it she possessed few men of genius. An exception must be made in favour of Claudius Galen (131–201 A.D.), a Greek physician, born in Pergamos, but who had also studied all the sciences under the most distinguished teachers in Corinth and Alexandria. On his return to his native city he was appointed physician to the school of gladiators, but later he went to Rome, where by his power of rhetoric, his profound knowledge, and his practical ability, he soon took a foremost place, and was appointed physician to the emperor.

He was a prolific writer and gathered up all the medical knowledge of his time; he arranged it in such an admirable manner that it remained the authoritative account of the science for centuries; and without his writings it is certain that the valuable work of many of his distinguished predecessors would have been lost, and thus the progress of medicine definitely hindered. The subsequent Greek and Roman authors were mainly mere compilers from his writings, and when about the sixth century his works were translated into Latin they were widely followed in the West; while in the ninth century, when translated into Arabic, they were at once

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adopted throughout the East also, and for many years remained the leading text-books among the Arabian physicians. By his influence great progress was made, particularly in anatomy. He described nearly all the bones in a monograph on the skeleton, and advised his students to go to Alexandria to see and handle the bones, from which it may be inferred that then no human skeleton existed in Rome. He was the first to refute the doctrine hitherto held that the arteries contain air, he showed that blood flowed from a wounded vessel, but he did not realise the circulation. He studied accurately the function of the muscles, partly by exposing them in animals and observing their actions in producing flexion and extension of the joints. He recognised that the heart was a muscle, and showed that the nerves came from the spinal cord and the brain, and that they are separately concerned in sensation and motion. He divided the body into cranial, thoracic, and abdominal cavities, and described the viscera that they contain. He dissected animals, not human bodies, but apes as being most like men, or possibly occasionally the body of a man found murdered. Excepting in Alexandria human anatomy had been but little studied through dissection, pagans and Christians alike dreaded interference with the dead body, though they had not hesitated to put the bodies of the living to the greatest tortures and indignities.

After the time of Galen, either from prejudice or apathy, the practice of dissection was apparently given up for centuries, and except by Cœlius Aurelianus, scarcely anything was written in the Latin language to help to develop medical knowledge, which was barely maintained in the West by its connection with the Church.

At about the time of the death of Galen, the Roman dominion seemed to be so firmly established that it could never be shifted. The domain of the mind was also apparently stable and definite; the teaching of Aristotle was the authority in physics and metaphysics, as was that of Galen in medicine, while in moral philosophy, Plato, Epicurus, and Zeno were almost universally followed.

But the mission of Christ was meanwhile secretly extending. Despite the constant persecution of its converts, Christianity increased in numbers and influence (the blood of the martyrs was bearing its fruit on the whole world of thought, as well as on religions and philosophies), until the Christians constituted a powerful party in the State. In 312 A.D., a century after the death of Galen, Constantine the Great had obtained possession of

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Rome and of the Western Roman Empire. He had been converted to Christianity, it is said, by seeing a flaming cross in the sky, carrying the words: ἐν τούτῳ νικα (By this, conquer!), and by a vision bidding him to inscribe the shields of his soldiers with the sacred monogram of the name of Christ; hence the well-known "Labarum" or "Standard of the Cross," which he afterwards gave to his army.

He now put himself forth as the head of the Christian party. It was natural that the first Christian Emperor should greatly favour the Christians, and place leading members of the new religious body in positions of wealth and power; at the same time these privileges encouraged crowds of worldly persons, who cared nothing about its religious ideas, to be warm supporters of the new sect.

Pagans at heart, their influence was soon manifested in the paganisation of Christianity that forthwith ensued, and the doctrines of the Christian faith became transformed from a religion into a political system.

A few years later Constantine, having also conquered the eastern provinces, became sole governor of the Roman world. He selected Byzantium as his capital, and inaugurated it as the seat of government under the name of Constantinople.

But the eastern and western provinces were again permanently separated at the death of the Emperor Theodosius, 395 A.D. One of his sons, Honorius, ruled from Rome over the western portion—Britain, Gaul, Spain on the Mediterranean, and Italy—while Arcadius reigned at Constantinople and governed Turkey, Greece, Asia Minor, Syria, and Egypt.

The Roman Empire was very soon overrun by Huns and Visigoths, and various tribes who conquered and left desolate the regions over which they passed, until the Germans under Odoacer (476) practically destroyed it. Italy came under barbarian rule, Rome ceased to be its capital, and later passed into the hands of the Popes.

From the fifth to the eleventh century were the dark ages of Western Europe. Learning and the sciences were entirely neglected by the people. The Greek language became practically unknown, though Archbishop Theodore made an exception by bringing a Greek library from Tarsus, and by finding translators for it in the School at Canterbury. Within the pale of the Church, particularly in Southern Europe, a few men could obtain such protection as

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enabled them to study. Later, ecclesiastical schools were maintained, in some of which a study of medicine was encouraged, together with that of other branches of science. Thus, intellectual work and the learned professions fell into the hands of the clergy, some of whom possessed a little knowledge of the healing art, recognised a few symptoms of diseased conditions, and possessed receipts for herb remedies, instruction in which they always considered important.

Throughout the early history of medicine, from the descendants of Æsculapius in the temples of ancient Greece, in Alexandria, and in Rome, the practice of the healing art has often tended to pass into the hands of the priests, who have devoted themselves always to the study of books, and who have always been an educated class. By them, however, the science of medicine has often been tinged with theological controversy. They deserve the greatest credit for the rescue and care of books and of the treasures they contain, but with them scientific accuracy usually counted for little, investigation and free thought were strongly discountenanced, while the natural causes of disease were taught to be regarded as due to divine wrath or diabolic influence, and their cures to depend on prayer, and to be brought about by the power which the priests could alone exercise through their divine prerogative. Much good work that these well-read men could have done was hampered by their religious dogmatism, and by that habit of mind which also spoiled the progressive development of the old pagan philosophies —the blind regard for tradition, and the lack of original study and research—the encouragement of theories and disputations on matters of opinion which often started on faulty assumptions, and frequently disregarded matters of fact.

On the other hand, it is to the early Christian clergy that we are indebted for the foundation and support of the system of voluntary hospitals. It is true that there existed in ancient Athens, Cynosarges—homes for deserted children—and in Rome, Iatreia—State-supported infirmaries, but it was St. Basil, Bishop of Cæsarea, who founded the first voluntary hospital there in the year 370 A.D., together with an almshouse, where he preached a theological pathology and a cure by faith. St. Ephem the Hermit collected money for the help of the sick during a plague, and founded the hospital at Edessa, 372 A.D., which has played a great part in the history of medicine: while about 400 A.D., Fabiola, a rich Roman

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widow, also built one. After these examples, buildings and endowments have been dedicated by Christian peoples, heathen Emperors, and Moslem chiefs to the relief of suffering humanity, and this system remains to-day the greatest work of voluntary charitable effort.

Certain parts of the Roman Empire showed at different times increased interest in the art of healing, but scarcely any real progress was made in knowledge of disease: and very few important original writings were in Latin.

Meanwhile the Byzantine Empire, with Constantinople as its capital, although it underwent a great variety of fortunes, was maintained for more than a thousand years, until 1453, when its last Emperor, Constantine XI, died, sword in hand, vainly trying to save his capital and kingdom from the attack of the Ottoman Turks.

Throughout the entire history of the Byzantine Empire, freedom, originality, force of intellect, and character were repressed by the severe despotism of the Imperial Government, yet for many centuries this Empire was a bulwark of Christian theology against Persians, Saracens, and Turks, while it transmitted Christianity to Russia and other Slavonic tribes. In it the Greek language and learning continued to survive, until banished by the Turks in 1453, and although no advance was made in medical knowledge it produced a few Greek physicians, educated in the Alexandrian school, who by their writings maintained some general interest in the subject, and spread the doctrines of Galen and Hippocrates by means of compilations which became the chief medical classics of the earlier Arabian teachers of medicine.

In the fourth century, Oribasius, of Pergamos, physician to Julian the Apostate (who made him Quæstor at Constantinople), was the last of the great pagan physicians. After the Emperor's death, Oribasius was banished, but he effected such extraordinary cures and so attached himself to the savage men around him, that he was recalled to the capital and reinstated. He was held to be the wisest man of his time, most skilful in medicine, and most charming in conversation. His 'Collections' of earlier writers are exact and well arranged, and his work on obstetrics is of considerable value.

The first medical writer of note who professed Christianity was Ætius, who, like Oribasius, held office in the Byzantine Court. He was born in Amida, 502 A.D., an eastern outpost of the Grecian

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Empire, where he was brought into contact with Arabian medicine, and he gives many remedies taken from this source.

In the sixth century there also flourished Alexander of Tralles, a Greek physician who practised in Rome. His writings, and those of Ætius, show some originality, but are imbued with mysteries, and are evidently influenced by the theological teaching around them.

Paulus Ægineta was one of the last Greek medical writers; he lived about 690 A.D., and must have practised among the Arabs shortly after the days of Mahomet. He travelled extensively, and acquired much knowledge and skill in surgery and obstetrics. His synopsis of the medical art has gone through many editions in the original Greek, in Latin, and in English, while translations from it into Arabic formed the chief guides and handbooks of the Arabian surgeons.

The Christians, as they became more powerful, broke up the pagan schools, and discouraged the learning of what they designated the profane sciences. Some of the leaders of the Christian Church were still influenced by the writings of the old philosophers and scientists, amongst these, Nestorius, the patriarch of Constantinople, must be mentioned, as he largely influenced the development of medical knowledge. His unorthodox opinions caused him to be excommunicated by the Council of Ephesus (431), and he was confined in a monastery near Constantinople, whence he was banished to Arabia. His followers, escaping to Mesopotamia, joined the university already existing at Edessa, and founded a medical school there which for a time rivalled that of Alexandria. They were further expelled by Bishop Cyril and driven into Persia. Other Nestorians banished out of the Roman Empire wandered as far as Persia, India, and China, and carried their higher education with them. Excluded from the service of the Church, and unable to gain eminence in the State, they devoted themselves to the study of medicine, and founded in several centres schools of philosophy, mathematics, and astronomy, in which medicine was also taught. Perhaps the most celebrated was the university at Djondesabour (Jondisapur, Gondisapor), in which were combined the ancient knowledge of the East, Greek philosophy, and Christian doctrine Students of many countries and of different creeds came to these schools for purposes of study and to gain experience. They enjoyed toleration under the Califs, and exercised much influence by their teaching throughout Arabia, Syria, and Palestine.

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When some years afterwards Justinian (A.D. 483) expelled the pagans from Alexandria and Athens, many of these also escaped into Persia, where they found the Hospital and University at Jondisapur strongly imbued with the ideas of the Nestorian Christians, some of whom had found their way to India and had returned to Jondisapur with much of the lore of that country, and even with Hindu physicians learned in the knowledge of Indian remedies. This city thus became a very strong medical educational centre, where Easterns and Greek philosophers and scientists, Jews from Egypt, Nestorian Christians from Syria, and Hindoos, all met for purposes of study and the development of learning. Here they were later to be joined and strengthened by the Arabs.

About the year 600 A.D. Christianity had spread into Arabia, into which many Jews had already immigrated. The ancient pagan creeds had ceased to be living faiths, and converts were preaching the doctrines of the Unity of God, the ancient religion of Abraham, human responsibility, and the judgment to come. Among these arose Mahomet, who united the different families of Arabs and the neighbouring tribes under one sceptre and one creed; and within a century after his teaching, Arabia, India, Syria, and Egypt were in the hands of his followers. His successor, Amrou, seized Alexandria, which since the second century had been the great centre of the conflict between Christianity and heathenism, and had gradually become the chief seat of Christian theology. He completed the destruction of the great library of the Ptolemies which had not only received serious injury at the hands of Julius Cæsar and Archbishop Theophilus (A.D. 391), but had been for many years uncared for, pilfered, and dispersed. The later Califs, however, made good amends for this; they encouraged men of merit and gave them employment, among these were Greek philosophers, the heretics banished from Christian countries, and the many thousand Jews who had been living in Alexandria since the time of its capture.

The Saracens thus came under the influence of Greek and Hebrew civilisation and of the main principles of Christian doctrine. The Nestorians taught their children, and the Jews became their family physicians; their ferocious fanaticism became tempered, their manners polished, and their thoughts elevated. The dominion of the Arabs from the time of Mahomet to the fall of the Califate of Bagdad in 1258 is a very important period in the history of civilisation, and an interesting chapter in the history of medicine.

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If there was no great advance in knowledge under the Arabs, at any rate mental culture and study were encouraged and maintained by them while Europe was still in the deepest intellectual darkness. Learned men were invited from all parts by the Califs and were remunerated for their labours with princely munificence. The works of the best Greek, Syriac, and old Persian writers were industriously collected. Ambassadors were instructed to buy up all they could procure of them in other countries, and the books were at once translated into Arabic and liberally distributed to the schools that needed them. Thus the intellectual treasures of Greece gradually became centred in the Saracens.

The Augustan age of Asiatic learning was during the Califate of Al-Mamun (813–832); he made Bagdad the centre of science, collected great libraries, and surrounded himself with learned men. He is reported to have brought into Bagdad hundreds of camel-loads of manuscripts, and he acquired by treaty one of the great libraries of Constantinople. At Cairo there were said to be 6,500 manuscripts on astronomy and medicine alone. Every great library had a department for the copying or manufacture of translations, and such manufactures were also managed by private individuals; thus Honain (850), a well known Nestorian physician, had a private establishment in Bagdad for the copying of translations or manuscripts. He issued versions of Aristotle, Plato, Hippocrates, and Galen. The translators were mostly Christian employées.

In science the Arabs were willing workers, and rendered important services. They studied by experiment and observation, not by speculation and theory; they followed the writings of Aristotle on philosophy, and gave preference to his inductive reasonings rather than to the intellectual reveries of Plato.

Many of their best philosophers were also physicians, who not only kept alight the flickering torch of Greek medicine, but made some real advances, particularly in pharmacy and therapeutics, but not in surgery, because of the Oriental repugnance to the shedding of blood, nor in anatomy, for the Koran forbade the dissection of human bodies. The principal medical works relied on were translations from Oribasius, Ætius, Alexander of Tralles, Paulus Ægineta, Hippocrates, and Galen. They disregarded Celsus and the two or three other Latin authors.

For a long time the centre of medical training was in the Hospital

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School at Jondisapur, and it was from hence that the first Pharmacopœia appears to have issued. Later schools of medicine sprang up in many cities under the domain of the Saracens.

Many hospitals flourished in Bagdad. The accounts that we have read of the perfections of the hospitals at Damascus and at Cairo, both as to their construction and management, are worthy the pen of the writer of 'The Thousand and One Nights.' Cairo possessed a public library and hall of science arranged for convenience and facility in reading, much as our best planned institutions for similar purposes are organised at present. It would appear that the medical students of Cairo were expected to pass rigidly conducted examinations, and that other Arabian colleges followed this example. In the Western Califate, universities, libraries, and hospitals seem to have existed in Cordova, Seville, Toledo, and other towns.

It is to the Arabians that we are indebted by their practical work for putting chemistry upon a sound basis. If the earlier objects of the alchemists to learn the secret of transmuting the baser metals into gold and silver, or to find the philosopher's stone and the elixir of life, were never realised, at any rate on the way to these discoveries were found many facts in chemical science. The Arabians created the science of chemical pharmacy and poly-pharmacy. Many chemical products were used in the treatment of disease, and new chemical methods were introduced for the preparation of medicines, together with many active vegetable remedies.

Their pestles and mortars, crucibles and furnaces, vessels for sublimation, coagulation, and calcining, for the making of infusions and decoctions were but little improved on till the eighteenth century, and many names introduced by them remain to-day:—Azimuth, Algebra, Alcohol, Alkali, Elixir, Zenith, Nadir.

In the Western Califate 1,000 years after Christ, "The Spanish Califs had surrounded themselves with all the luxuries of Oriental life. Europe at the present day does not offer more taste, more refinement, more elegance than might have been seen in the capitals of the Spanish Arabs. Their streets were lighted and solidly paved. The houses were frescoed and carpeted; they were warmed in winter by furnaces, and cooled in summer with perfumed air brought from flower beds by underground pipes. They had baths and libraries and dining halls, but wine was prohibited. The enchanting moonlight evenings of Andalusia were spent by the

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Moors in dancing to the lute or mandoline, or in sequestered fairy-like gardens, or in orange groves listening to the romances of the story teller or engaged in philosophic discourse; consoling themselves for the disappointments of this life by the reflection that, if virtue were rewarded in this world, we should be without expectations in the life to come, and reconciling themselves to their daily toil by the expectation that rest will be found after death—a rest never to be succeeded by labour." (Draper.)

But in the midst of all this comfort and pleasure, the towns of Spain, and of other countries under Saracenic rule, were thoroughly equipped to give their inhabitants a splendid education by means of schools, universities, and public libraries.

Amongst the long list of celebrated Arabian physicians may be mentioned Rhazes, a Persian (Rhazi of Bagdad), 850–922 A.D., called the "Experienced" or the "Experimentator," as he is thought to have made experiments on animals. He was professor in the University of Bagdad, where he taught large classes; and was the founder and director of the great hospital in that city. Like so many physicians of early days he is handed down to us as a kind of universal genius. The 'Liber Continens,' notes compiled for his own use, was an admirable epitome of medicine and surgery as then known, and long remained a guide to Oriental practitioners of medicine. It is said to have been the most valuable work that the small library of the Medical Faculty of Paris possessed at the end of the fourteenth century.

Another physician of the Eastern Califate was Ibn Sina (Avicenna), the foremost representative of Moslem science, who was born in Bokhara in 980 A.D. A most distinguished student in the University of Bagdad, he was astronomer, poet, philosopher, and statesman, as well as doctor. He was a first-rate osteologist, and described some structures hitherto unnoticed. His 'Canon Medicinæ,' based on the teachings of Aristotle and Galen, made him for a time the leading authority in the medical world, and remained a medical classic in Asia for many centuries; its scientific value was lessened by metaphysical speculations, and it was probably inferior in real value to 'The Continens,' or to the 'Almaleki,' or the 'Royal Book' of the Persian Haly Abbas.

The 'Materia Medica' of Mesuë (980), of Damascus, was the foundation of the pharmacopœias in Europe, and was used as a guide of the London College of Physicians in the reign of James I.

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Albucasis, of Cordova, 1022, wrote one of the first independent treatises on surgery, which was illustrated by drawings, and contained much valuable work. It was largely quoted by mediæval surgeons.

Averroes, the most famous of Arabian philosophers, was born at Cordova 1126. He was educated in philosophy and in theology, and he became a judge in Morocco. He was also physician to the Calif, for he had studied medicine under Avenzoar (Ibn Zohn), whom he frequently praises, and who wrote largely on practical medicine. He was dismissed from office for expounding the Koran according to Aristotle, and thus founding a Moslem philosophy of religion which was unorthodox, and which gave rise to many heresies in Europe. He wrote a sort of medical system which, under the name of 'Colliget,' was translated into Latin and repeatedly printed.

Many books of these well-known writers on Arabian medicine, which describe the views held by this remarkable people on the theories and treatment of disease, were afterwards translated into Hebrew and into Latin.

The political conditions under which Arabian science had flourished gradually ceased to exist. The Castilians, under Ferdinand III, absorbed the Spanish territory, while the inroads of the Turks and Mongols into other parts were mainly instrumental in driving away the learned men with what books they could rescue from the libraries, chiefly into Italy.

Amidst the general disregard of learning in Europe during the early Middle Ages, some interest in the practice of the art of healing had been maintained, thanks to the religious orders. Their information was chiefly derived from the somewhat degenerate knowledge on the subject which had been passed on by the Latin writings of the later Roman medical authors.

Monastic medicine was at one time much interwoven with augury, divination, cheiromancy, astrology, and alchemy; but a better appreciation of medical science was due to the efforts of the Benedictine Order, who have always given a high place to the work of education and instruction, both in worldly and religious affairs, and whose monasteries have been valuable repositories of learning. One of the most important of their establishments had been founded by St. Benedict (480) himself at Monte Casino, near Naples.

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Not far from this monastery there flourished one of the first great mediæval centres of intellectual activity. Salernum, on the Bay of Naples, was a Roman colony celebrated for its cooling baths, which were mentioned by Horace in contrast to the warmer ones of Baiæ. Its value as a health resort probably protected it from destruction by any of the numerous nations into whose hands it had fallen by the vicissitudes of war, until it was safely included in the kingdom of Naples. The Medical School for which it was early celebrated, may have been inaugurated by teachers who had escaped from Alexandria when that city was captured by the Saracens (640 A.D.). But whatever its origin, its great development in the Middle Ages was due to the efforts of the Benedictine monks, whose monastery at Monte Casino lay a few miles on the other side of Naples.

The school of Salernum was a non-religious body in which law, as well as philosophy, was taught, but the preponderance it gave to medicine as early as the ninth century earned for it the name of "Civitas Hippocratica." The earlier studies there were doubtless from the Latin works of Celsus and Cælius; for at that time the knowledge of Greek had disappeared from Italy, while the Arabs had (at the end of the seventh century) acquired nearly all the Greek manuscripts. A knowledge of Greek and Arabian medicine was probably first brought to it about the middle of the eleventh century by Constantine the African, the most celebrated Christian physician of his time. Constantine (1018) had travelled, for purposes of study, in Egypt, Bagdad, Babylon, and India, and when he returned to his birthplace, Carthage, his knowledge was so great that he was looked upon as a sorcerer, and was compelled to fly in order to save his life; escaping to Salernum, he wrote extensively on medical subjects in the monastery of Monte Casino. His writings were chiefly translations in Latin from works of the earlier Arabian physicians, and from Hippocrates and Galen. They stimulated much interest in drugs and materia medica, and led to the publication of a Salernian pharmacopœia.

At the end of the eleventh century, Salernum, which lay on the high road to the East, became a great medical centre for the soldiers injured in the Crusades, who, coming from different parts of Western Europe, may have brought various forms of valuable knowledge, while their wounds and injuries must have largely increased both the experience and the reputations of the medical men whose duty it was to attend to them.

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Among others, William the Conqueror visited the town, and the famous rhyming Latin poem, "Regimen Sanitatis Salerni," which afterwards circulated widely in Europe, is supposed to have been written for his son Robert.

During the twelfth and thirteenth centuries Salernum became the principal university in Christendom, and it long exerted a widespread influence on the progress of medical science. Numerous very celebrated teachers in Paris, Bologna, and other schools received their education there, one of whom, Roger of Parma, with the help of his pupil Roland, of Bologna, gave the ground work for the 'Commentary of the Four Masters,' a celebrated early textbook on surgery.

As time went on other schools began to rival that of Salernum. During the thirteenth century the old Universities of Montpellier, Bologna, and Paris were rapidly increasing in importance, while new ones had been founded at Naples and Padua by Frederick II.

Frederick II of Germany, 1194 (grandson of Barbarossa), afterwards king of Sicily, Rome, and Jerusalem, is one of the most interesting figures of the Middle Ages. He was in many ways the most enlightened man of his time, and he is said to have spoken all the principal languages of his extensive empire—German, French, Italian, Latin, Greek, Arabic, and Hebrew. He supported all forms of learning and culture, and encouraged all men of ability, while he himself, in addition to his great power both as a general and as a politician, was a diligent student of natural science. He instituted codes of law to suit all classes of his German and Italian subjects, and in 1224 he united all the different faculties and schools of Salernum into a university, and ordered that no one should practise medicine within the two Sicilies until he had been publicly examined by the Faculty of the University on the 'Aphorisms' of Hippocrates, the 'Synopsis' of Galen, or the 'Canon' of Avicenna.

The first attempt to control the practice of medicine appears to have been made by Roger II, founder of the Kingdom of Sicily, who, under his firm but tolerant and enlightened government, in 1140 advised that everyone who wished to practise medicine must obtain authority to do so from a magistrate.

Second only in importance to Salernum as one of the earliest centres for culture in Western Europe was Montpellier, which, lying near the sea on the great route from Italy and Provence to

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Spain, was, during the Middle Ages, in a highly favoured position for commercial and intellectual importance. Its Schools of Medicine, Law, and Arts developing during the twelfth and thirteenth centuries were formally constituted a University by Papal Bull in 1289. The Faculty of Medicine was founded mainly by Arabian physicians; Arnaud of Villeneuve (1235) was its best known representative, but he also worked long in Paris, visited the Italian Universities, and went to Spain for the purpose of translating the manuscripts of the Arabian physicians. He came into collision with the theologians, and many of his books were burnt. He wrote on medicine, theology, and chemistry. He introduced many chemical compounds into therapeutics, and is said to have discovered spirits of wine and oil of turpentine, while he regarded alcohol as a most important remedy for disease, hence its name, "eau de vie."

At this time the Latin authors were being seriously studied, while the works of the Arabian compilers were translated into Latin, and through them a knowledge of Greek medicine, somewhat tinged with Eastern ideas, was restored to Europe.

The two most celebrated surgeons of the end of the thirteenth century were William of Saliceto, a professor in Bologna, and his pupil, Lanfranc of Milan, who afterwards went to Paris. Under the influence of their teaching was the well-known anatomist and surgeon, Henri de Mondeville, a pupil of the School of Montpellier. He in turn was the master of Guy du Chauliac (1300), and through these men a knowledge of the best Italian surgery was introduced into France.

The University of Oxford joined in the general revival in the thirteenth century, but especially because its fame had just then attracted the four great orders of mendicant friars—Dominican, Franciscan, Carmelite, and Austin Friars—who threw themselves into the studies of the University with such enthusiasm and with such success that emulation was kindled among other monastic and educational bodies, so that there followed a still further improvement in teaching. It was at this time that Roger Bacon (1214) was working at Oxford on physics, exploring the secrets of Nature and making discoveries which were looked on as the work of magic.

The first great revival of medical learning in Europe took place in Italy. The old University of Bologna had long been known for its Law School, but the Medical Faculty rapidly became celebrated at the beginning of the fourteenth century, chiefly by the teachings

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in anatomy of Mondino, who was born at Milan (1315). He accurately studied the superficial markings on the human body, and made dissections at any rate on a few subjects, despite the difficulties, at that time serious, attending any such investigation. His book 'Anatomia' was the first published of importance since those of the Alexandrian anatomists. The excellent practical instruction in anatomy given at Bologna attracted, among others, Guy du Chauliac, the leading practitioner of the day, who had been a student of medicine in Montpellier and Paris. He had a wide knowledge of medical literature, but from what he observed in dissection, and in the study of patients, he became dissatisfied with the opinions he had acquired by reading, and with the medical practice of his teachers. Continuing investigations for himself, he learned how to observe accurately, and he laboriously translated the best Greek and Arabian authors for his own use. The increasing knowledge he thus gained, his independence and originality, his power of observation, and his fairness towards the writings of others enabled him to write in Latin a most valuable work, 'The Inventory,' which soon became the recognised guide for surgical practice, and was freely translated into various languages. It still remains a valuable comment on the condition of the science in the Middle Ages. He practised at Lyons, and at Avignon, where he was adviser to the Popes. There was at this time a tendency for the ecclesiastical physicians to hold aloof from manual intervention, and to look down upon surgical practice, which was thus left in the hands of less educated and less favoured disciples of the healing art. Du Chauliac endeavoured to bridge over this tendency to the separation of surgery from the other branches of medicine. He was constantly improving surgical method, and trying to raise the status of its practitioners.

The Roman Catholic clergy held sway in learning over the greater part of Europe. They were essentially the educated class, their monasteries were the great depositories of knowledge, and they tended to monopolise the learned professions. In their hands the practice of physic became so lucrative that it was necessary to prevent the monks from neglecting their religious duties in favour of the study of medicine. The secular members, however, continued to practise all branches of the healing art until in 1215 an ordinance of Pope Innocent III debarred the clergy from undertaking surgical operations on the plea that the Church "abhorret a sanguine."

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This command threw the practice of surgery from the monks into the hands of the barbers and bonesetters, who practised it mechanically, and without any special training or anatomical knowledge, but who were encouraged to compete with the surgeons proper. In England, surgeons practised as well as physicians, at any rate as early as the twelfth century, when a "Guild of Surgeons" and a "Guild of Barbers" seem to have flourished quite separately and distinct from one another.

At the end of the fourteenth century, physicians, chiefly ecclesiastics, and surgeons, entirely laymen, and usually but little educated, were practising in London, some holding appointments at Court, or in the army, and many of them recognised as possessing a complete knowledge of their professions; and in addition there flourished barbers, barber surgeons, apothecaries, and all kinds of irregular practitioners of medicine.

In 1423 a great effort was made by the physicians to combine all the physicians and surgeons practising in London in a Conjoint Faculty of Medicine and Surgery. They had to be content that this Faculty was granted by the Mayor and Aldermen of London, for the recent death of King Henry V having left the Government under a Regency, had prevented it from being granted by Royal favour. Each partner of the Conjoint College was to be independent the one of the other. The management consisted of two Surveyors of the Faculty of Physic, two Masters of the Craft of Surgery, presided over by the Rector of Medicine, who was to be a Doctor of Physic and a Master of Arts. No physician or surgeon was to be allowed to practise in the City of London until after due examination (whether in medicine or surgery as the case might be) by examiners appointed by the Faculty, and after having been admitted a member of the Commonalty of Physicians and Surgeons by licence of the Mayor and Aldermen of the City.

The new body soon began to interfere with the ignorant and unauthorised practitioners, and endeavoured to prevent members of the Guild of Barbers from practising surgery. The barber-surgeons, however, very soon obtained a confirmation of their rights to practise, which had been granted to them as early as 1415.

The Conjoint Faculty did not last long. No action seems to have been taken by the physicians to form a society for themselves until the College of Physicians was founded a century later. But the surgeons continued to work together towards their plan of

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consolidating the craft, and in 1435 they appear as an established body, "The Guild of Surgeons," with a code of laws for the governance of the Society. The "Barbers' Guild" was meanwhile also strengthening its position, and in 1462 obtained from King Edward IV a Charter of Incorporation, which made it a City Company. Thus "The Barbers" and "The Guild of Surgeons" worked on side by side, but they could not prevent unlicensed persons who owed no allegiance to either guild from encroaching on the domain of surgery.

We need not further follow the numerous changes that occurred in the control or otherwise of the practice of surgery, but it is evident that the leaders of the Church possessed great power over the control of medicine in England, even into the seventeenth century.

The abuses committed by ignorant and illiterate persons in the practice of physic do not appear to have exercised the attention of our Legislature till the third year of the reign of Henry VIII (1511), when an Act was passed, the preamble of which set forth that:—

> "Forasmuch as the science and cunning of physic and surgery (to the perfect knowledge whereof be requisite both great learning and ripe experience) is daily within this realm exercised by a great multitude of ignorant persons of whom the greatest part have no manner of insight in the same nor in any other kind of learning &c."

And which goes on to enact—

> "That no person shall practise physic or surgery within the City of London or seven miles thereof without being first examined and approved by the Bishop of London or the Dean of St. Paul's (who shall call to their assistance four doctors of physic and for surgery other expert persons in that Faculty) upon pain of being fined five pounds for every month such person shall practise without being thus admitted."

By this Act similar powers were given to the Bishop of every diocese, for the examination of persons practising in the country; but an agitation against this Act caused its practical repeal, and it was ordained that at all times from henceforth it is lawful to any person being the King's subject, having knowledge or experience of the nature of herbs, &c., to minister in and to any outward sore or wound according to their cunning. The ecclesiastical authorities,

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however, maintained for more than a century the right to confer their licence to practise.

The Royal College of Physicians of London, the oldest Medical Corporation in the United Kingdom, was founded in 1518, by King Henry VIII on the suggestion of his physician, Thomas Linacre (1461), and by the advice of Cardinal Wolsey, for the improvement of the art of physic and for the repression of irregular practitioners "who profess physic rather from avarice than in good faith, and to the damage of credulous people." Many of the lay practitioners of medicine at that time were probably not much better instructed than the average mechanic.

Linacre, having become a Fellow of All Souls' College, Oxford, went for further study to Italy; he worked under that most remarkable genius, Polititian (1461), who was then Professor of the Greek and Latin languages at Florence, at that time the brilliant centre of the Italian Renaissance under the guidance of Lorenzo de Medici.

Linacre is said to have become the companion of the children of Lorenzo, but at any rate he came into contact with many of the most learned men of Italy at a time when, on the one hand, the development of art, literature, philosophy, and language was encouraged in a magnificent, if semi-pagan, spirit; and on the other hand, when Savonarola (1452) was preaching against luxury, splendour, vice, and the worldly and irreligious manners of the age.

Having been made a doctor of medicine in Padua, then the most celebrated school of physic in the world, Linacre returned to England, and was soon occupied in busy medical practice among the notable people of the time. Henry VII made him (1501) tutor to Prince Arthur and king's physician, which latter post he retained under Henry VIII. About 1509 he was ordained to the priesthood, became a Canon of Westminster, and held other Church benefices.

Linacre, by his high position in the Church, and as a scholar, was enabled to interest the University authorities at Oxford and Cambridge in his scheme for medical education. He arranged that a chair should be founded in each University for the purpose of distributing the knowledge contained in the writings of Hippocrates and Galen.

It is noticeable that until within recent years no one could become a Fellow of the London College of Physicians unless he had graduated at Oxford or Cambridge. Hence the learning for

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which the Fellows of the College have been famous, the good social position that they were able to maintain, and the esteem in which they were held in earlier days compared with the surgeons, whom, indeed, they would scarcely recognise as fellow workers, although the Act of 1540 explicitly declares that "surgery is a part of physic, and may be practised by any of the company or fellowship of Physicians." Linacre's scheme in founding the College of Physicians was without doubt partly to create a good understanding and unanimity among his own profession — which of itself was an excellent thought—but also in order to make its members more useful to the public. In addition to urging the necessity for its formation, Linacre supplied the funds necessary for the endowment of the College of Physicians.

By charter it was declared that no person except a graduate of Oxford or Cambridge was to be allowed to practise physic throughout England, unless he had been examined in anatomy, physiology, and the practice of medicine, and had been approved by the President of the College and his colleagues, the Elects, who were appointed for the purpose of controlling this matter. Moreover, even for University graduates who intended to practise in or within seven miles of London, it was necessary for them to pass the examination of the College of Physicians in addition to possessing their University degrees.

Linacre was distinguished as an ecclesiastic, a scholar, and a physician. He translated several works of Galen into very pure and elegant Latin, and was an early advocate in England for the new learning. "In private life he had an utter detestation of everything that was dishonourable; he was a faithful friend, and those whom he found distinguished for ingenuity, modesty, learning, good manners, or a desire to excel he assisted with his advice, his interest, and his purse."

Another distinguished University scholar was Dr. John Caius (1510), who became a Fellow of Gonville Hall, Cambridge. He studied in Italy, and took the M.D. of Padua, where he is said to have given lectures on Artistotle. He afterwards lectured on Anatomy in London, and practised at Shrewsbury and Norwich. A loyal Catholic, he founded and became Master of the newly-made Gonville and Caius College, he was Physician to Edward VI, Queen Mary, and Queen Elizabeth, and was nine times President of the College of Physicians.

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A great impulse was given to education and study in Europe in 1453, when Constantinople fell into the hands of the Turks. All men interested in learning who could escape from any part of the Turkish domain did so, and took with them all the writings they could save. Many went into Italy, where they were well received by the Medici in the North, by the Kings of Sicily in the South, and by the Pope in Rome, while some escaped into France and other parts of Europe.

At the same period another great impulse arose which rendered the distribution of knowledge far more rapid and widespread than it could possibly be made before. The art of printing by the use of movable type was invented in Europe about the middle of the fifteenth century. The name of the country in which the invention took place, the name of the inventor, the year of the invention are, up to the present, matters of dispute, but a knowledge of the new writing spread with marvellous rapidity, perhaps particularly in some German towns, though William Caxton brought it to England as early as 1476.

The discovery by Columbus of the New World was a further impulse towards the development of intellectual effort.

At the close of the fifteenth century the Arabic school was still predominant in medicine, but as the study of Greek literature was encouraged and spread, the books of Hippocrates and Galen were read alongside those of Rhazes Avicenna and Mesue, and translations of them into Latin were instituted. Thus was encouraged a spirit of criticism as to the relative value of the teachings given by the various authors, and in regard to what observation of diseased conditions really showed.

Benevieni (1440), a Florentine who lived towards the end of the fifteenth century, made systematic *post-mortem* examinations for the purpose of discovering the anatomical position and the character of any abnormal conditions he could find. He examined the bodies of those who had been hung, and made many autopsies. He wrote a work on some of the hidden causes of disease.

Eustachius (1500), who was Professor in Rome, and was given by the Pope great opportunities for dissection, also closely observed pathological changes.

While the Italian schools were imbued with the great necessity of the knowledge of anatomy as the groundwork for medical practice, and the French were producing men of great clinical

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ability, particularly surgeons, some capable people were still being influenced by prophecies and visions, and allowed their imagination and fancy to guide them rather than their senses. The old, superstitious mystic side of medicine was being preached by one of its most gifted exponents for them.

Theophrastus Bombastus von Hohenheim, the son of a Swiss physician, was born at Basle 1493. He called himself Paracelsus, as he considered he surpassed every medical authority who had preceded him, Celsus among them. He visited many European cities, but seems to have passed his time in dissipation rather than in study; on his return, however, he was made town physician at Basle, and was appointed Lecturer on Medicine at the University. A man of great forethought, a good observer, with considerable knowledge of the world, full of conceit, and with no consideration for the feelings of his contemporaries, he founded his doctrines of medicine, not upon scientific inquiry or experiment, but upon the four "immovable pillars" of Philosophy, Astronomy, Alchemy, and the Virtue of the Physician. He lectured in German, a most unacademic proceeding—it is hinted because he had forgotten his Latin. His arrogance in assuming that no medical writings previous to his own deserved consideration and his intemperate life soon emptied his class room, and, having to leave Basle, he wandered to different towns in Germany. He left behind him some 300 works written in Swiss German, showing in parts ability, but of little value to the progress of medical science.

A very different man was Jean Fernel, born at Clermont 1497. He was physician to King Henry II of France, and found time, in the midst of a very large practice, to collect from the best writers and to translate into excellent Latin the Greek and Arabian masters.

He divided medical science into Physiology, Pathology, and Therapeutics, and the following statement of his views on diagnosis could scarcely be improved on in the present day:—

"As for myself, I shall never believe I have profound knowledge of any affection if I do not know positively, just as if I could see it with my eyes, in what part of the human body is the disease, its primitive seat, what suspicion of organic lesions constitute it, whence it proceeded, if it exists idiopathically or by sympathy, or if it be kept up by some external cause. He who pretends to be a rational physician must sound each of these subjects and discern them by certain signs."

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But theory is too attractive to allow ingenious minds to be long idle. The love of system has been a perennial hindrance to medical progress. Fernel was ill-judged enough, to be led astray by sophistry, and to attempt to systematise and formulate a plan of treatment upon the doctrine, "Contraria contrariis curantur": an endeavour to narrow and simplify the wide field of therapeutics, just as absurd as that which was made 300 years later in order to found a so-called new school of medicine on the equally fallacious dogma, "Similia similibus curantur."

Surgery shared the advance made by the Renaissance, especially in France, and its practitioners improved their social standing with their knowledge.

As early as the year 1279 there had existed in Paris a little brotherhood of lay surgeons known as the Collége de St. Côme. This was the nucleus of the first college of surgeons of which we have records. Its members were in constant competition on the one hand with the Faculty of Medicine of Paris, and on the other hand with the barber surgeons.

After many years of varying success, the brotherhood of St. Côme (about 1515) became affiliated with the University of Paris. Those who desired recognition as practitioners of surgery put themselves under the university lecturers, and many who in former days would have practised without education in France as barber surgeons, were equipped with knowledge which gave them a real qualification to practise.

Thus surgery and medicine became closely allied together in France early in the sixteenth century, to the advantage of those who practised them and to the further development of the healing art.

Ambroise Paré (1510) is deservedly designated the "Father of Modern Surgery." After study at the Hotel Dieu he became an army surgeon, and took every advantage that a campaign affords to study wounds, burns, and other injuries. Although he held the highest surgical position at the Court, and was surgeon to three kings of France, he passed many years of his life in warfare. He successfully used the trephine, and made several improvements in surgical instruments. He replaced the use of the cautery for hæmorrhage by the ligature, and did away with the use of boiling oil in gunshot wounds—the universal method of treatment before his day. In spite of his extended practice and his frequent employment as military surgeon, he found time to write many books, and

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always desired to tell his colleagues of any advances and improvements that had been made. His "Cinq Livres de Chirurgie" (which largely influenced the practice of surgery in all countries) and other works were written in French; indeed so ignorant was he of Latin, that a special exception of the examination in Latin prescribed by the statutes of the Surgical Brotherhood of St. Côme was made in his favour, in order to allow of his being admitted a member of that body.

With the diffusion of truer and more comprehensive notions of structure and function, surgery became bolder and more effective, safer and swifter, reaching the then highest point in Richard Wiseman, the father of English surgery (1595). He seems to have gained experience both in the navy and the army. His 'Seven Chirurgical Treatises' show evidence of sound practice, particularly in dealing with tumours, wounds, fractures, and dislocations, and gave important help to laying the lines of scientific surgery.

About the beginning of the sixteenth century dissections were permitted to be made in Italy, the corpses being chiefly those of executed criminals, and some advantage was taken of this favour.

But the Belgian, Andrew Vesalius, born in Brussels, 1514, was the first great anatomist after Mondino and the Alexandrians, the first to make a real advance in the study of anatomy. He dissected animals, and having observed, at a place where criminals were executed near Louvain, that birds had removed the flesh from one of the bodies, he removed the bones and ligaments of the skeleton thus exposed. Later he removed other bodies or limbs from places of execution or from cemeteries, and he made such good use of them that at 22 years of age he became professor of anatomy in Padua, and published at the age of 28 his book, 'De Corporis Humani Fabrica,' an epoch-making record of accurate observation and of independent and original work.

Columbus Vesalius's prosector at Padua, made many dissections and described the valves of the heart, and also the circulation of the blood from the right side of the heart through the lung into the left auricle, which Michael Servetus had earlier believed. He practised venesection and showed that the pulmonary veins contained arterial blood, but it was left to Harvey to appreciate the greater circulation through the systemic vessels. About that time Eustachius was professor in Rome, Ingrassias at Naples, while Fallopius during his life of less than 40 years, lectured

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at Ferrara, Pisa, and Padua; his assistant, Fabricius Aquapendente (1537) made valuable researches on the comparative anatomy of the development of the embryo.

William Harvey, born at Folkestone 1578, took his Arts degree from Caius College, Cambridge, and then studied under Fabricius at Padua, where he became M.D. in 1602. He was elected physician at St. Bartholomew's Hospital, and as Lumleian Lecturer at the College of Physicians he expounded his views on the circulation of the blood; and after further investigations he published his celebrated treatise, "Exercitatio Anatomica de Motu Cordis et Sanguinis," in 1628, at Frankfort (because it was declined in England); but for many years the doctrine of the circulation of the blood was criticised and denied. The capillary circulation and blood corpuscles were shown by Malpighi (1628) some 50 years later.

The genius of Francis Bacon, Lord Verulam (1561), who had replaced the deductive logic of the school-men by inductive methods, and who urged that truth is not derived from authority but is the fruit of experience, gave a great impetus to future scientific investigation; while the rapid progress of anatomical knowledge, the discoveries of Galileo (1564), and of Kepler (1571), and the endeavours of Descartes (1596) towards the attainment of philosophic certainty, his explanations of physical phenomena, and his work on mathematics, tended to widen the results of Harvey's discovery and to give a new impulse to inquiries about health and disease from the standpoint of science.

With the seventeenth century the status of medical men had much improved. All forms of intellectual effort associated with medicine tended towards originality. Italy, the Netherlands, and England (all comparatively free from national struggles), made great advances in scientific work. France produced many giants both in literature and in science, while her well-organised College of Surgeons provided good instruction, and enabled her pupils to take and retain the lead in this department of work. Germany had not yet fairly started in her grand career of intellectual development.

Sylvius (1614), in his little hospital of 12 beds at Leyden, relied on his knowledge of chemistry and anatomy, and on Harvey's doctrine of the circulation of the blood, for the treatment of his patients. He was the first to systematise clinical instruction, taking his pupils daily to visit the sick in the hospital. "There

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I have put the symptoms of disease before their eyes, have let them hear the complaints of the patients, and have asked them their opinions as to the causes and rational treatment of each case, and the reasons for those opinions. Then I have given my own judgment on every point. Together with me, they have seen the happy results of treatment when God has granted to our cases a restoration of health, or they have assisted in examining the body when the patient has paid the inevitable tribute to Death" (Withington).

Thomas Sydenham (Sommo Ippocratista Inglese) (1624) was the member of a Dorsetshire county family, and graduated M.B. at Oxford, later taking the M.D. at Cambridge. He appears to have been on terms of close intimacy with John Locke (1632), one of the most conspicuous figures in the intellectual history of modern Europe, with Robert Boyle (1627), and with other members of that association of scientific men who, "inquisitive into natural philosophy and other parts of human learning, did by agreement meet weekly in London on a certain day to treat and discourse of such affairs." These meetings may have originated with the "Invisible Society," founded by Milton in 1645; but, at any rate, the persevering "philosophers" were, through the favour of Charles II, incorporated by charter (in 1662) as the Royal Society of London for the Promotion of Natural Knowledge. Sydenham was profoundly influenced by the spirit and method of Hippocrates. If he failed to realise the importance of anatomy and physiology, it was because these new sciences had lent themselves, in his time, to all sorts of theories about disease which were utterly at variance with bedside experiences. Sydenham laid great stress on accuracy of observation, and stated that careful note-taking would show that certain diseases were quite typical in their life-history. He insisted on the healing power of Nature, and on simple, direct methods of treatment. He shone chiefly as a successful practitioner of medicine with a clear, unprejudiced mind, who organised and simplified the excessive systems and theories of his day. The doctrines and teaching of Sydenham influenced the future of medicine throughout Europe.

Balgivi (1669), a pupil of Malpighi, became a Professor of Anatomy in Rome, and founded the theory of medicine known as "Solidism." He was profoundly influenced by the teaching of Sydenham, as was also Boerhaave (1668), who continued to carry

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on at Leyden the clinical teaching introduced there by Sylvius. He was the most celebrated physician of his day, and he made the Leyden hospital the centre of the medical teaching of Europe, while patients came to consult him from all parts of the world. He wrote 'Institutiones Medicæ' and 'Aphorismi de Cognoscendis et Curandis Morbis.' He also rendered services to the sciences of botany and chemistry. After him Leyden soon ceased to be an important medical school, but the art of clinical teaching there established was carried by Van Swieten to Vienna, and by other pupils to Edinburgh and many Universities. Boerhaave was a charming character, most popular, amiable, and unassuming; and whilst he was successful in doing good work and in gaining a high reputation, he also realised a fortune of two millions of florins from his profession.

Surgery has recently become almost a perfect art, almost a complete science, one of the greatest triumphs of human intellect, energy, and resource. The problems that the physician has still to solve become increasingly difficult and more exacting, and they require greater scientific accuracy for their elucidation; but meanwhile the progress in accurate knowledge brings him daily nearer truth in diagnosis and certainty in treatment.

The study of morbid anatomy started in Bologna by Morgagni, and that of physiology by Johannes Müller in Berlin, continue to gain new ground; while the "Natural History School" of Schönlein has, through the work of Pasteur, Koch, and Lister, recorded observations on the life processes of organisms within the human body of the deepest interest, and has made bacteriology one of the most important branches of practical medicine.

But much requires to be done in this abstract scientific work, and as the health of the people should be a matter for the State—not only one for the medical profession—we may well ask (while we continue to do the unpaid clinical work of the hospitals) that Professors who show a special aptitude for research should be retained at the expense of the State, instead of being allowed to work at science for nothing during the time they can keep back out of a busy life of professional toil.

A has been the case in Scotland, some progress in scientific research will no doubt be made in some of the new Universities recently established in London, Birmingham, and the North of England. They will increase the opportunities for men of originality

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and power to show themselves, but for good progress endowment must be given.

The old English Universities, particularly Cambridge, have begun to take some real interest in medical science.

The medical profession in the present day, armed with a rea knowledge of its work, and possessing a scientific insight into the problems of life and into the structure and capacity of individuals, must in the future be bold enough to take responsibility in advising the State as well as the family upon conditions of life, of labour and of environment.

Finally, we know that our constant struggle with disease and death, and our efforts to ameliorate the health and happiness of our fellow-countrymen, are carefully watched and encouraged by His Majesty the King, whom God protect!

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CLINICAL EVENINGS.

November 12th, 1900.

PECULIAR CASE OF CHRONIC COLITIS.

By EDMUND CAUTLEY, M.D. Cantab.

THE patient, a girl aged 4½ years, had been ill since last Christmas. There was no family history of tuberculosis. The child's past history was good, except that she had always been rather delicate. The only definite illness was scarlet fever two years ago. Last Christmas she began to lose her appetite and waste. Soon after she developed pain in the abdomen and diarrhœa. The history was rather difficult to obtain, but the diarrhœa appeared to have commenced in May, and had continued since then, although she had been treated at a Children's Hospital from May to September. During the last fortnight there had been blood in the stools; possibly that had occurred for some time previously without being noticed. The child was now very anæmic, very much wasted, but on physical examination nothing abnormal could be found except that the liver extended 1½ inches below the ribs. There was no definite abdominal tenderness at any particular spot. At present the abdomen was a little distended, but at times it felt lax and empty. He had not been able to detect local resistance anywhere. The most characteristic feature of the case was connected with the stools, which were loose, very offensive, and contained small black particles of clotted blood. Vomiting occurred daily since admission. The child was evidently very ill, yet there was practically no pyrexia. During the five days she had been in the hospital under his care the temperature was normal for two days, and during the last three rose to 99·4° in the evening. On the whole, he based his diagnosis of chronic follicular colitis on the length of the history, the anæmia, the wasting, and the character of the stools. He excluded tuberculous affection, on account of the absence of fluid in the abdomen, the absence of abdominal distension, the temperature, and the character of the stools. It was practically the first very chronic

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case he had met with, although recently he had come across an epidemic of acute colitis in children, of which he proposed to publish the details shortly. Six children were affected, four of whom died. In those cases the symptoms consisted in the peculiar stools, in the rapid wasting, and in the vomiting. The cases which died vomited freely, and nothing would stop it. He was not certain that the vomiting in the present case had anything to do with the disease. He did not think much attention had been paid to chronic colitis in children, although in infants, under the name of entero-colitis or ileo-colitis, it had been noticed frequently, especially abroad. He would be glad of opinions and a prognosis.

[NOTE.—Dr. Cautley reported at a subsequent meeting that the child died on December 30th, 1900. On *post-mortem* examination there were found multiple tuberculous ulcers in the ileum, extensive tuberculous ulceration of the cæcum, and two large ulcers in the colon. One of the latter had produced a stricture of the colon, the lumen of which would only admit an ordinary penholder. A little adhesive peritonitis caused matting together of the coils of small intestine at the bases of the ulcers. An old caseous nodule was present in the upper lobe of the left lung. None of mediastinal or mesenteric glands were caseous. The case was, therefore, one of tuberculous enteritis and colitis, probably due to secondary infection by swallowed tuberculous sputa.]

Mr. WALLIS said he had not examined the case very closely, but suggested the possibility of it being a case of tuberculous peritonitis. Cases of that disease occasionally occurred with very little effusion or abdominal distension. There seemed to be fairly marked abdominal distension that evening, although Dr. Cautley stated this was a temporary condition. It might be the fibrous form of tuberculous peritonitis. With regard to treatment, if it were tuberculous peritonitis one would suggest laparotomy. If it were not, it would be interesting to know what treatment Dr. Cautley suggested in cases of colitis, as they were extremely difficult to cure. He (Mr. Wallis) suggested that a temporary colotomy and washing out of the bowels with intestinal disinfectants would be useful. He would be glad to know whether any rectal examination had been made so as to exclude multiple polypi.

Dr. VOELCKER asked whether there had been at any time any œdema, either of the hands or of the feet. In some cases of chronic colitis he (Dr. Voelcker) had noticed œdema over the dorsum of the feet or hands, or of the limbs or face. He had seen it without very profuse diarrhœa, and occurring in fairly old children, *i.e.*, up to 6 or 7 years of age. He was inclined to agree that the case shown was not one of tubercular peritonitis, partly from the feel of the abdomen and partly from the chronic nature of the diarrhœa. He had been very satisfied in similar cases to the one shown with the use of creosote, in combination with small doses of castor oil. When tubercular disease could be satisfactorily excluded, it was desirable to be very careful before giving a prognosis that the child would rapidly get well. He had had under his care for several years a boy who had been seen by many doctors in London, who agreed in the diagnosis of chronic colitis. For the first

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two and a half years the illness was continuous, and then it recurred in the next five years at irregular intervals—sometimes in summer and sometimes in winter. For the last three years, under the treatment he had mentioned, the boy had been perfectly free from any attacks.

Dr. CAUTLEY, in reply, said he appreciated the points which had been advanced by Mr. Wallis, but, on the whole, he concluded it was not tuberculosis on account of the character of the stools: dark blood clots, such as were present in this case, were extremely unusual in tuberculous enteritis. Rectal examination had not been made, but it should now be done by a competent surgeon. He had not noticed the œdema referred to by Dr. Voelcker, but the case had not been under his observation long, and, so far, had not exhibited it. Œdema was frequently seen in children apart from colitis, and might be due to debility. He was obliged to Dr. Voelcker for his suggestion as to creosote. The treatment of colitis was exceptionally difficult, and his own view was that very careful dieting was most important. In acute colitis it was difficult for the patients to keep anything down. Sometimes they would retain peptonised milk, at other times albuminous fluids or weak starchy solutions. The present child had an almost entirely milk diet, and was being given large doses of salicylate of bismuth. If that did not improve matters he would be glad to carry out Dr. Voelcker's suggestion. He considered that the prognosis was very unfavourable.

A CASE OF MOLLITIES OSSIUM IN A CHILD.

By THOMAS H. KELLOCK, F.R.C.S. Eng.

THE history of the child was as follows:—She was 7 years of age. The father and mother were quite healthy, the former a labourer, the latter had been a domestic servant; they were of no blood relation before marriage. A paternal uncle suffered from a deformity of the spine, the result, it was stated, of an accident. The grandmother, on the mother's side, suffers from ptosis, similar to that in this patient. There was no other history on either side of the family of any deformity or disease of bones.

The child was born at full term, 10 months after the parents' marriage. There had been no children or miscarriages since. The mother suffered no privation during the pregnancy. The labour was easy and rapid, although the child must have been large, as she weighed nearly 12 lbs. at birth. She was nursed by the mother for three days, after that she was given at various times cows' milk, Nestle's milk, Savory and Moore's and another patent food, and later raw meat juice, bovril, and milk puddings, but generally with a fair quantity of cows' milk; she would never eat vegetables except a little potato. Nine days after the birth of the child the mother, as she expresses it, "went off her head," and was sent to Brentwood

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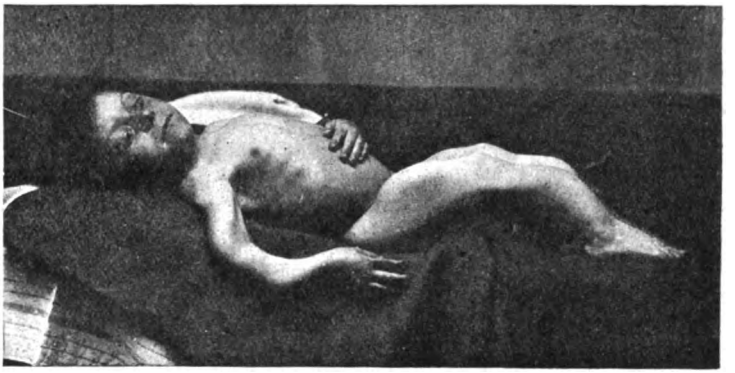
Asylum, where she remained one month; she was quite recovered on her discharge, and has not suffered in that way since. Soon after birth the child was noticed to have a drooping of the right eyelid.

When five months old, without any known cause, the left thigh suddenly swelled and became painful and tender. On taking the child to the London Hospital the mother was told that the femur was fractured; she was admitted to the hospital, where she was kept in splints for nine weeks; union appears to have taken place. Eleven months later, without any accident, the left tibia fractured; she was again an in-patient at the London Hospital, and whilst there the left humerus fractured. On subsequent occasions the right femur (twice), right tibia and right humerus (three times) fractured, and within the last year the right femur and humerus have again broken—in the



case of the former at the site of one of the former fractures. These bones and the others which have not been broken have gradually assumed their present bent condition.

The child was 18 months old before she cut any teeth, she has never been able to walk or stand, but, with the exception of measles and varicella, has not suffered in general health. The mother has never noticed anything wrong in the quantity or quality of the urine.

The child appeared fairly healthy, she was bright and talkative, but spoke with a curious accent and drawled her words, her intelligence was good for her age, especially when one considers the life she has led, never able to walk or stand, and being an only child she has been made a good deal of by her mother, and has never been able to mix with other children. She was very undersized,

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measuring only 30 inches in length. The head was somewhat peculiar in shape, the forehead receded, and there was a considerable depression at the back of the skull between the parietal bones and the occipital; the circumference of the head was 19 inches, she had ptosis of the right upper lid, and possibly a very slight strabismus. The spine was short, and showed considerable convexity in the dorsal region, the ribs somewhat crowded together, and slightly beaded at their junctions with the cartilages, the clavicles very slight but not bent. The pelvis, although small, did not appear to be distorted. It was in the long bones of the limbs that the changes were most marked, they were tender, and at times the seat of pain. In all of them very marked bending was seen, both femora were curved in an outward and forward direction, in the right the sites of at least three united fractures could be made out, the upper one joined at a very considerable angle; both tibiæ and fibulæ were curved in a forward direction, chiefly noticeable at the lower part. In the upper extremities the humeri were curved outwards and forwards, in the right the site of a united fracture at the lower end was very evident, the radii and ulnæ were markedly curved outwards, there was a little limitation of extension at the elbows, the result probably of mechanical causes. The bones of the hands and feet did not appear to be affected. The epiphyses were comparatively a little large, but this was probably more due to attenuation of the shafts than to enlargement of the epiphyses themselves. The teeth were ill-developed and carious, the muscular development was poor. There was no evidence of visceral disease. The urine was scanty, the average for seven days being only 13 ounces measured, but this probably did not quite represent the full quantity. Mr. Willcox, of the Pathological Chemistry Department at St. Mary's Hospital, had very kindly analysed a 24-hours specimen, which measured 9½ ounces. He reported that the specific gravity was 1025, reaction acid, colour amber, no deposit albumen or sugar, slight increase of urine pigments, urea 4·1 per cent., phosphoric acid ·42 per cent. On acidifying and allowing to stand a large deposit of uric acid crystals occurred. He added:—"The main point about the urine is thus the increased percentage of phosphates and of urea, both double the normal."

A skiagraph of the leg shows that the shadow thrown by the bones is slight, as if there was a decrease of the compact tissue, and a corresponding increase of medullary tissue.

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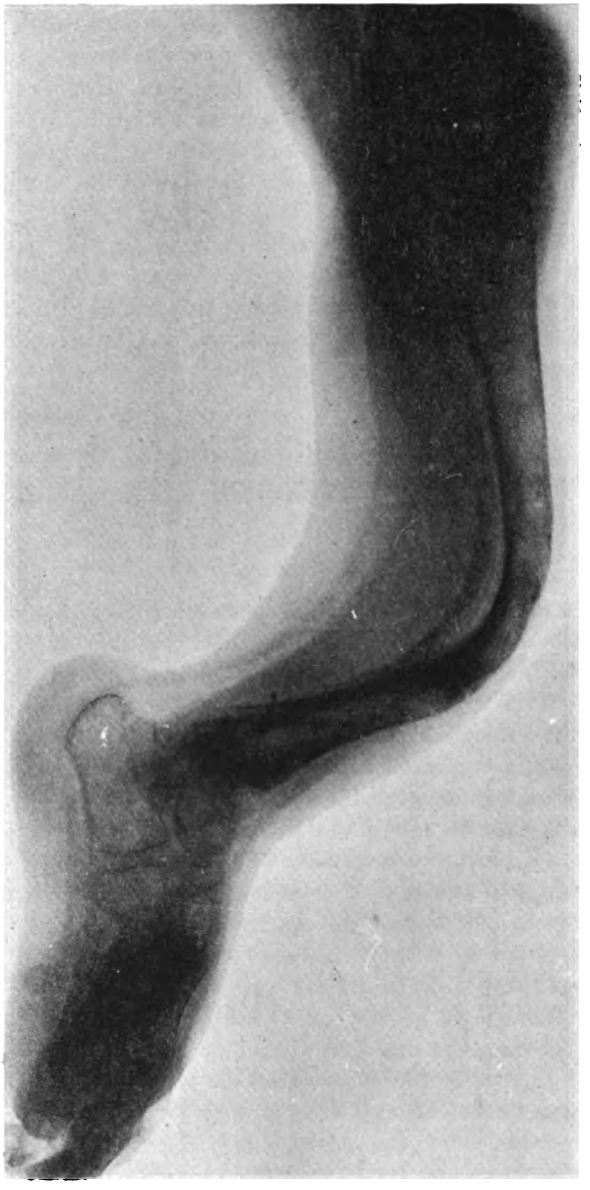

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Mr. Kellock drew attention to a very similar case exhibited before this Society by Mr. Dent in 1896, and reported in the 'Transactions' for that year. The patient was a male, aged 29. He preferred the name mollities rather than fragilitas ossium, because the affection seemed to approach nearer to the type of the former; he did not think it had any connection with rickets. A noteworthy feature in the case was the pain in the bones, which sometimes preceded the fractures, that had been noticed in cases of mollities ossium in adults. The urine in this case, with the excess of phosphates and urea and the small quantity, corresponded to some extent with what had been observed in adults. He had been unable to find any of the proteid which was said to occur in adult cases.

SPECIMENS OF THE BONE FROM A CASE OF LATE RICKETS PREVIOUSLY SHOWN AT A MEETING OF THE SOCIETY.*

By E. Muirhead Little, F.R.C.S. Eng.

Mr. Muirhead Little exhibited specimens from a case which he showed before the Society last April, under the name of "late" or "continued" rickets. She was a girl of 17, who had had symptoms of rickets since 5 years of age, and whose bones were then quite soft, and the skiagrams showed that the epiphyses of the wrists were very like the epiphyses in infantile rickets. She died last May, after a day or two's illness, with acute cerebral symptoms, and he was able to secure the femur and radius which he now exhibited. He had also two ribs. They were sent to the College of Surgeons, and it was by the kindness of Mr. Shattock that he was able to exhibit them. At the lower end of the femur there were characteristic rickety changes, irregular ossification, with islets of cartilage shut off in the bony tissue. These cases were generally thought to be very rare instances of continuing or late rickets. As far as he was able to find out, the trouble started at 5 years of age, but it might have been much anterior to that. He had at present under his care a lad of 17 with very marked knock-knee, very large epiphyses, indeed a typical case of rickets. He performed an osteotomy, and found the bones were extremely soft.

* 'Trans. Med. Soc. Lond.,' vol. xxiii, 1900, p. 348.

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The skiagram also showed a lack of lime salts in the bones. He hoped later to show the patient to the Society. He brought the specimens in order to complete the case which he showed in the Spring, and as he thought that they completely justified the diagnosis.

The PRESIDENT said it was exceedingly fortunate that they were able to look at the pathological specimens of one case and the living subject of another of the same disease. The cases were rare. Two years ago he had a case which greatly resembled the child now before them under his care in the Children's Hospital, where he came after being in two or three other London hospitals. He came from Surrey, and was the only child in the family. He lived in a healthy district, and though his parents were labouring people they kept him well nourished, that is, there was no scarcity of food either in quantity or quality. He experienced fractures of almost all his long bones. He also was very much older than he looked, and he was sent away because nothing could be done for him. He saw the case again in the Examination Hall at the ordeal for the Fellowship. The interest of such cases was on the pathological side. He thought Mr. Little's specimens afforded good justification for calling them cases of rickets. On the other hand Mr. Dent referred to his case as fragilitas ossium,* while Mr. Kellock termed a similar condition mollities ossium, so that really the name did not carry them very far. Mr. Little's specimens showed a large and irregular form of epiphysial cartilage, islands of cartilage, which rendered the resemblance to rickets very strong. The clinical features of Mr. Kellock's case were particularly interesting, and he did not remember previously hearing of the pain preceding fracture. That reminded them of cases of sarcoma where pain in the limb was followed by fracture. He hoped Mr. Little would fulfil his promise of showing another case, because the more instances of these anomalous types they could see, the more likely they would be to arrive at a proper idea of their characters and origin.

VASCULAR SWELLING CONNECTED WITH THE THYROID GLAND.

By H. A. CALEY, M.D. Lond., F.R.C.P.

H. W., aged 56, came to St. Mary's on October 10th for a swelling on the right side of the neck, which he had first noticed about two months previously, and which he said had rapidly increased in size. There was some pain in the site of the swelling, and occasional pains radiating down the right arm and towards the right ear. When questioned he admitted some dyspnœa on exertion, but there was no dysphagia nor dysphonia. Gonorrhœa 30 years ago; no evidence of syphilis.

* 'Trans. Med. Soc. Lond.,' vol. xx, 1897, p. 339.

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On admission there was a prominent pulsating swelling apparently connected with the right lobe of the thyroid gland; it extended downward to within an inch of the sterno-clavicular articulation, and above appeared to be continuous with the thyroid. The swelling moved freely with the thyroid on deglutition, pulsation marked but not definitely expansile, at times a systolic bruit, and during diastole a palpable rebound synchronous with the second sound, which was much accentuated over the swelling.

The left lobe of the thyroid appeared somewhat enlarged; no enlarged lymphatic glands. There was, in addition, an area of dulness over the manobrium sterni and right first intercostal space, with a soft systolic bruit, followed by an accentuated second sound. Both the systolic bruit and the loud second sound were quite distinct from the similar signs present over the swelling in the neck.

Slight pulsation and a faint diastolic shock were at times present over the dull area. Right radial pulse smaller than the left, but no inequality of carotid pulses could be detected.

These intra-thoracic signs suggested an aneurysm involving the innominate artery, and the peculiarity as to the radial and carotid pulses might be accounted for by implication of the orifice of the subclavian by the sac.

With complete rest for five weeks, restricted diet, and large doses of potassium iodide the swelling and the pulsation had considerably diminished.

As to the nature of the swelling connected with the thyroid, the local conditions, more particularly the conspicuous and localised pulsation, and the diastolic rebound with accentuated second sound, suggest an aneurysmal dilatation, possibly originating in the inferior thyroid artery or one of its main branches, but in view of the rarity of such affection other explanations have to be considered, *e.g.*, a highly vascular goitre of an asymmetrical type, or a sarcomatous growth.

The characters of the swelling together with the diminution under potassium iodide are against sarcoma; on the other hand the association of definite vascular degeneration in the vicinity naturally supports the view of an arterial origin, and the improvement under potassium iodide would accord with this, though not incompatible with a highly vascular goitre. On the whole the conditions present favour the view that the swelling is aneurysmal. There are no indications of commencing Graves's disease.

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Mr. WALLIS said he did not feel inclined to agree with Dr. Caley, though he had not examined the case as closely as that gentleman. It seemed unusual to have an aneurysm of the inferior thyroid artery contained in the thyroid gland, and for the swelling to be perfectly movable when the man swallowed. There was no distensile pulsation. He doubted whether the swelling pulsated to the extent which at first might appear. He thought when the hand was placed on the swelling and pressed down on to the dilated vessel below, they would get pulsation conveyed from the vessel. Probably there was some cystic swelling of the thyroid on that side, and the unusual condition of the arteries just over the swelling gave the impression that it might itself be aneurysmal. He could not imagine an aneurysm of a portion of the inferior thyroid artery limited to a movable swelling of the thyroid.

Dr. CALEY, in reply, said the intra-thoracic lesion was quite separate from the vascular swelling which was connected with the thyroid gland. The reason he referred to the signs in connection with the innominate artery was because the existence of vascular change in that direction might have an important bearing on the nature of the swelling in the neck. With regard to Mr. Wallis's remark as to it being communicated pulsation, that was the first thing one thought of, but he considered that the three points which were strongly against it being so were—the strictly localised character of the pulsation, the marked diastolic rebound over the swelling, which was unusual in cases of communicated pulsation, and the marked accentuation of the second sound, which was likewise unusual. Those signs, he thought, made it clear that there was some local dilatation of the arteries, if not actually aneurysmal.

CASE OF CONGENITAL LOCOMOTOR ATAXY IN A CHILD.

By COURTENAY C. WEEKS, M.R.C.S.

THE patient, a boy aged 8½ years, had been under care about a year. The first symptom noticed was incontinence of urine. The father had syphilis three and a half years before the birth of the patient; the elder sister was born with snuffles. The patient did not exhibit any sign of that disease at birth. There was motor inco-ordination of the head and of all the limbs, and the gait was ataxic; there were inversion of the feet and inco-ordination on shutting the eyes. The sensory changes consisted of pain in the stomach for over a year, and in the lower limbs the pain had been very severe, especially at night; he also complained of pins and needles in the feet. There was a band of hyperæsthesia round the abdomen. The plantar reflexes were diminished, and the knee-jerks were quite absent. Priapism came on whenever he was examined. The pupil changes had varied, but these were sometimes sluggish to light. The optic discs presented no changes. He sometimes said

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that he could not pass urine, and then five minutes later passed a great quantity involuntarily. An interesting feature about this family was that the father presented ataxy, various sensory perversions, gastric crises, and slight ptosis in one eyelid.

Dr. EWART asked whether there had been any irregularity of speech. The cases were exceedingly interesting and very important in connection with the heading under which they were exhibited. It might, therefore, be desirable to submit them to some opinion on behalf of the Society. Some of the symptoms reminded one of an early stage of Friedreich's disease, and in view of the unusual features presented by the cases as instances of tabes, every endeavour should be made to confirm the diagnosis and to avoid any chance of a confusion between the early stages of the two diseases.

Mr. WEEKS, in reply, said he would be pleased to consent to any course thought desirable, but would it meet the case if the patient were shown again later? He could ask Sir William Gowers to see the child and pronounce an opinion upon it. With regard to the likelihood of it being a case of Friedreich's ataxy, he drew attention to the absence of articulatory troubles, and the total absence of nystagmus, either horizontal or vertical.

The PRESIDENT said it would be well to get Sir William Gowers's opinion and make it an addendum to his own, and bring the case up in a year's time.

THREE CASES.

By MORGAN DOCKRELL, M.D. Dub.

(1) and (2) *Two Cases of Adenoma Sebaceum;* (3) *A Case of Hyaline Degeneration of the Skin.*

CASES 1 AND 2.—One patient was a child, aged 6 years, and the other a woman, aged 24 years. In both the condition was congenital. There were a number of small sebaceous tumours of about the size of millet seeds, over which the skin presented telangiectasis. They had started and were most plentiful, as usual, on the face. Some years ago when he had been looking up the subject, there were only 10 cases recorded, but at the present time there were some four or five cases attending St. John's Hospital. There were two interesting features about these cases. In the first place it was generally believed that the disease was associated with the occurrence of fits and the want of intelligence, but in neither of these cases did these features exist. In the second place a warty condition was usually thought to be associated with the disease, but in neither of these cases was there any lesion of the kind. He had carefully

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studied the histology of these cases, and coloured sketches, photographs, and microscopical specimens were exhibited showing that it was a true adenoma of the sebaceous glands. There was marked dilatation of the lumen of the blood-vessels corresponding to the telangiectasis.

Dr. GALLOWAY said it was interesting to see two stages of the disease side by side, and especially the latter case, on account of the results of treatment by electrolysis which had been carried out. Dr. Dockrell had mentioned the difficulty long laboured under in assigning the correct pathological position to these cases by microscopical examination, and he (Dr. Galloway) thought the matter now was not clear. The obvious signs of degeneration of the skin, shown by the telangiectasis of tissues, pointed to certain developmental defects in the skin rather than to any sort of overgrowth of the sebaceous glands. He recollected several years ago, in Dr. Mackenzie's practice in the London Hospital, examining microscopically certain of those tumours, and he was very much impressed with the fact that microscopic appearances similar to those noticed in this disease could be obtained in different conditions, the direction in which the sections were made had much to do with the appearance observed, and the effect of adenomatous overgrowths could be closely simulated. Other congenital defects, such as the peculiar dulness of intelligence in a large number of the cases which had been brought forward, were very interesting phenomena. He made these remarks as a criticism of the name adenoma sebaceum which had been attached to the cases, partly as the result of the early published observations of his friend Dr. Perry, of Guy's Hospital, but which he did not think that gentleman would be willing to support now with the vigour which he did then.

Dr. EDDOWES said he had a case under his care which he saw occasionally, and in that not only was there no loss of intelligence, but the boy was exceptionally bright.

Dr. DOCKRELL, in reply, said they had to distinctly bear in mind that in those cases there was a condition in the microscopic specimen fulfilling what was their conception of adenoma, an overgrowth without any loss of tubuli or acini of the gland. Therefore, although there seemed a certain amount of doubt as to how the condition originated, still there was an adenoma, and he maintained that to all intents and purposes the term used was the right one.

CASE 3.—Dr. Morgan Dockrell also showed a case of hyaline degeneration of the skin (a condition which corresponded somewhat to the colloid milium of Besnier). The patient was 20 years of age, and she had had all her life small translucent waxy tumours beneath her eyelids. The case was a unique one and he had the opportunity of studying the histology of the affection. The change was not an adenomatous one, but there was cystic enlargement of the glands, the cysts being distended with hyaline material. Before deciding on the case he sent microscopical specimens from it to Dr. Unna, of Hamburg, who expressed the opinion that the change was not

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adenoma but a special hyaline degeneration of the connective tissue, "a special disease of the coil glands and surrounding tissue undergoing first hypertrophy and then degeneration."

Dr. GALLOWAY said he must venture to criticise Dr. Dockrell's third case, but so far as the clinical appearances were concerned he did not consider the case unique. Dr. Colcott Fox, who was present earlier in the evening, said the type of disease was quite familiar to him, and to his (Dr. Galloway's) knowledge several cases had been brought before the Dermatological Society of London. Dr. Dockrell had certainly shown them microscopical preparations stained by new methods which he had not had the occasion of applying to these tumours, though he was familiar with the appearances when stained with hæmatoxylin and eosin. These acid orcein reactions had shown that the elastic tissue underwent degenerations of which they had no knowledge before, and it was important to use this method in all forms of degenerative lesions. In the senile skin, for instance, the elastic tissue underwent complete change; there occurred disruption of the fibres, and a swelling of the fragmented portions, and that, along with other changes, was sufficient to give rise to peculiar alterations of elasticity in the senile skin, with which features they were all familiar. One warning he would like to utter in reference to conclusions derived from those methods of staining, and especially in reference to so-called hyaline degenerations. The word hyaline had been applied with so much irregularity to various diseases of the skin, that it almost required a definition before venturing to apply it to any new condition. It had been used some time back by Naumann in describing hyaline degenerations, and it had been used in connection with hyaline degenerations of epithelium, and in connection with certain peculiar changes of the vessels. They did not know much about those changes, but the changes which the tissues must almost of necessity undergo during the preparation of the specimen must be taken into consideration. It was difficult to be convinced that the changes seen under the microscope were not in some instances due to processes which the tissues had undergone during preparation. Still, when comparing tissue with tissue, from the same specimen, but prepared by different methods, the actual changes might be definitely ascertained. He was glad Dr. Dockrell drew attention to the condition of the coil glands. In such cases which had come under his observation the remark had also been made, that there must be some change in the glandular structures of the skin rather than a more diffuse degeneration of the elastic tissue or the connective tissue. In the degeneration which occurred in the senile skin, the whole skin was affected. In the degeneration in this particular case, one saw the elastic tissues changed only in the neighbourhood of the disturbances which took place in the coil glands. Though Dr. Dockrell had the credit of showing the changes which took place in the disease by newer methods, the clinical features of the condition had been already recognised, and many cases had been falsely described, under the name xanthelasma or xanthoma, as well as under the term colloid degeneration, a condition which had been very indefinitely described.

Dr. MORGAN DOCKRELL, in reply, remarked that no doubt there were cases which might resemble this one clinically, but unless histological examinations were made it was not possible to come to a conclusion as to their identity or not. He wished to emphasise the importance of making

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microscopic examination in all cases, when a very marked difference would be found to exist. As to the point that there was any uncertainty in diagnosing hyaline and colloid degeneration, it must be remembered that there were many forms of hyaline degeneration, such as that found in actinomycosis, that found in lupus erythematosus, and in lichen planus; but in all cases it was easy to diagnose it from true colloid material under the microscope. He hoped, on a future occasion, to exhibit a case presenting the clinical appearances of xanthoma, though histologically showing a colloid condition of the sebaceous glands with a hyaline appearance of the coil glands and connective tissue.

CASE OF BAKER'S CYST OF LEG (?).

By F. C. WALLIS, F.R.C.S. Eng.

MR. WALLIS said he did not know whether it was a baker's cyst. The man had the shape of his leg curiously altered, he had some swelling over the tibia, varicose veins, and an old syphilitic lesion. The interesting point was that the knee-joint was full of fluid, though it had perfectly smooth movement. On the upper and right side of the knee-joint was a fluctuating swelling, from which he aspirated fluid, which was like synovial fluid. He had not previously seen anything exactly like it. The skin on the upper part was chronically inflamed, and possibly there was also gummatous infiltration there. The patient had only been upon potassium iodide a week and he was already much better. The fluid withdrawn had been examined microscopically and bacteriologically, but nothing to throw any light upon the case was discovered.

TWO CASES.

By ALFRED EDDOWES, M.D. Edin.

(1) *Dermatitis Hiemalis;* (2) *Alopecia Areata with Coronal Baldness.*

CASE 1.—The patient, a man aged 30, a worker in the stained-glass trade, has been liable for the last 10 years to the outbreak of peculiar patches on his hands in cold weather. During last summer these patches did not entirely disappear as before. Latterly a few of the lesions have appeared on his face, though previously they had been entirely confined to the hands. He is not liable to chilblains. The lesions, which are all of the same character, are mostly situated on the knuckles; they vary from the size of a

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threepenny-piece to that of a florin; margins well defined, round or oval. Their surface seems eczematous, *i.e.*, encrusted, but there has been no discharge; here and there scaly and inclined to crack; their bases are red, slightly raised, and irritable. The palms are free.

CASE 2.—A man, aged 47, exhibiting patches of alopecia areata together with coronal baldness of the scalp, the latter having existed 15 years, the former 1½ years.

CASE OF INCURVATION OF TIBIA DUE TO ACCIDENT.

By the President, JOHN H. MORGAN, F.R.C.S. Eng.

THE patient was aged 16 years; one and a half years ago, when jumping a fence, his right leg got hung up on the bar, and he was suspended more or less by his foot. There seemed to be little effect at the time, and he was treated for a day or two with some lotion, after which he was able to get about. Some time afterwards the leg gave him considerable trouble, in consequence of which he went to the Tunbridge Hospital, where splints were applied, he was not kept as an in-patient, but was allowed to go about. After that he went to work in the fields, minding cows. At the end of 18 months he came to hospital with the swelling, which was evidently due to a considerable incurvation of the tibia. The fibula did not seem to be affected. He showed the skiagram, from which it appeared there was a fracture of the lower end of the tibia. It was interesting, because one might suppose that, owing to some injury done to the epiphysis, growth had been checked, and that the prominence and deformity were due to the continued growth of the fibula whilst the growth of the tibia had been arrested. But on inspection of the skiagram it was evident that the fracture took place at some distance above the epiphyseal line. The fracture must have been a long time in uniting. He had been under Mr. Morgan's care a fortnight, and had been put under massage in the hope of improving the muscular condition, with the result that the swelling was not so apparent as formerly. There was a good deal of room for doubt as to the original state.

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January 28th, 1901.

CASE OF ISCHÆMIC PARALYSIS IN AN ADULT.

By EDMUND OWEN, F.R.C.S. Eng.

THE paralysis following the application of a splint has been termed "Ischæmic Paralysis," on the supposition that the pressure on the vessels of the limb has impaired the blood-supply of the part so that the muscles have suffered, and perhaps a chronic inflammation with sclerosis of the muscles has followed. Mr. H. Littlewood attributes it merely to contraction of the muscle in healing after being torn. It is, however, not improbable that another factor is concerned in the production of this variety of paralysis, and this other factor is inflammation of the motor nerves of the part resulting from the excessive pressure by the splint. In some cases one of these factors, in other cases the other, may be the chief or only cause of the palsy, but it is not improbable that in most instances both causes act.

The patient, 30 years of age, a carpenter, was admitted into St. Mary's Hospital on March 31st, 1900. Seventeen months previously, when working on a wall at Krugersdorp, in the Transvaal, he fell about 15 feet, and stretching out his left hand to save himself, he "broke the outer bone" of his forearm a few inches from the wrist. (The fracture duly consolidated.) He was treated by a Scotch practitioner and a Boer practitioner in consultation, who fixed the arm between an anterior and a posterior splint which reached from the bend of the elbow to the wrist. The patient said that the splints were bound on very tightly by three pieces of bandage which were put on through looped ends—"bow-lines"—and hauled taut. He said he complained at the time that the splints were too firmly bound on, but that no notice was taken of his complaint; so he thought that such harsh treatment was probably in accordance with the needs of the injury. In four days' time—during which he had suffered intense distress—the splints were taken off, the hand being much swollen; they were afterwards reapplied. The splints were removed from time to time, and gentle massage was done during 30 days, after which

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the splints were entirely left off. The hand, however, remained swollen for at least two months, and during this time he lost the nails of his first and second fingers. The thumb-nail also blackened, but it did not come off. When the swelling went down there was very little feeling in his hand, and the fingers and thumb were stiff and useless. About a fortnight after the accident two sloughs appeared—an extensive one over the outer side of the forearm near the elbow, and a deep one over the tuberosity of the scaphoid bone. The resulting sores took respectively three and four months to heal.

The forearm was found to be fixed midway between pronation supination; the thumb was strongly adducted with the terminal phalanx rigidly flexed, and the fingers were stiffly bent into the palm. On firmly flexing the wrist the fingers could be partly straightened, but the thumb was immovable, and the hypothenar muscles were much wasted. Faradism gave no reaction, but galvanism set up sluggish contractions. There was considerable anæsthesia in the hand and fingers. The outlook was most unpromising, but the man readily accepted the suggestion that an attempt should be made to put slack into the pronator radii teres and most of the flexors by taking an inch out of the upper part of the radius and ulna. After this it was found that he could get his fingers straighter, and had much more power of rotation in the forearm, but the improvement was not marked, so most of the tendons at the front of the wrist were exposed by operation, split, cut, lengthened, and sutured.

In October the man was readmitted because non-union had followed the operation on the bones, and as the tendons seemed to need more slack being put into them, another inch was removed from the bones by the electric saw, and the fresh ends were adjusted by wire sutures. An operation was done for lengthening the long flexor tendon of the thumb. The limb was adjusted in a plaster-of-Paris apparatus as before, the wound healed perfectly well, but, as before, there was no solid union, and the question is:—"Can anything more be tried for him?"

Remarks by Mr. Owen.—The pathology of the case is probably this, that the tight and long-continued compression of the forearm kept the muscles completely starved of blood, and so injured them that a myostitis intervened, which, in its turn, was followed by an intractable fibroid degeneration of the tissue with permanent contracture. It was Volkmann who first described the disease

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and found the name for it—Ischæmic (ἴσχω, restrain; αἷμα, blood) paralysis.

I have seen a good many cases of ischæmic paralysis in children, but I have never previously met with an instance in an adult, and I should not be surprised to learn that no other case in an adult has been recorded, for an adult, as a rule, would absolutely decline to submit to the agony of the tight compression. In children the myositis has sometimes been determined by a few hours' compression; and, of course, the tighter the compression the shorter need be the period. My own experience of operation in these cases has been most unfavourable, but my colleague, Mr. Herbert Page, was enabled to speak more hopefully in a case which he recorded in a valuable clinical lecture in the 'Lancet' of January 13th, 1900, p. 83.

Mr. TURNER asked whether Mr. Owen, in the course of the operations, had an opportunity of looking at the main nerves of the forearm, and, if so, whether he found them quite normal in appearance; also whether they were quite normal higher up. Was there anything pointing to an affection of nerves as well as of muscles?

Mr. WALLIS said if he had known the case would be brought forward that evening he could have shown an exactly similar one, also in an adult, in which the condition was caused by an Esmarch's bandage. He had not yet done anything in the way of resection of bone, but the patient had been under a course of galvanism, faradism, and massage. He would take an early opportunity of showing the patient before the Society, perhaps at the next Clinical evening. The bandage was on only an hour and a quarter. The thumb condition was also like that in the present patient.

Dr. HUNTER said he had had an opportunity of seeing and treating electrically the case mentioned by Mr. Wallis. In that case he considered that the lesion was one primarily of nerve compression, and that the muscle wasting which had ensued was rather a sequel of the nerve lesion than of myositis. In Mr. Owen's case the trophic lesions in the hand and the glossy skin pointed rather to nerve than to muscle affection. Again, the contracture was very marked, and there was a lack of healing in the bone. If it were a myositis, however severe, there would be no reason for non-union of bone.

The PRESIDENT said the idea mentioned by Mr. Turner had also occurred to him, namely, that the trouble pointed to a nerve lesion. He had seen such very successful results recently in dealing with nerves which had been injured—by bullets and other things—that he hoped before any extreme measures were taken, the advisability of inspecting and dealing with the nerve would be considered. He might mention one case which, so far, was extraordinarily successful, though, of course, he could not speak of the ultimate recovery. It was that of a man who was shot through the forearm, the ulnar nerve being severed. He came to this country some time after the injury. The bulbous ends of the nerves were removed, and a few days after that the freshened ends were exposed, a sheep was killed in an adjoining stable, and within

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seven or eight minutes of the death of the sheep its sciatic nerve was planted in the interval between the injured ends. The result had been extremely satisfactory. Sensation had, to a great extent, returned, and there was partial recovery of muscular power. He thought Mr. Owen might possibly find that the trouble arose more from the nerve atrophy than from the myositis.

Mr. Owen, in reply, said he did not examine the nerves when operating in this case, but in a child with the same condition on whom he operated there was nothing wrong with the nerves, but the muscles showed extreme degeneration, being hard, white, and fibrous. Dr. Hunter's criticism was of extreme interest, but it was difficult to say what particular nerve had been injured or where the injury might be. He did not know what to do in the way of looking for the nerve injury, or what to do when he found the nerve. The condition did not receive attention in the text books. Early last year Mr. Herbert Page published a case in a child, which he had treated with partial success, but that, so far as he knew, was the only mention of treatment of Volckmann's paralysis in our language. He was much interested in Mr. Wallis's remarks, he had also heard of other cases which had resulted from the vigorous use of Esmarch's bandage, and this should make one careful about such bandaging, especially in the case of a child. He had had several cases in children, one or two of which he had operated upon, but in two of the cases there had been most marked degeneration of the muscle, and the muscular tissue was purely fibrous, as he had already said.

February 11th, 1901.

CASE OF LOCALISED ABDOMINAL SWELLING IN A CHILD.

By J. L. Bunch, M.D., D.Sc., Lond.

The child, aged 3, was strong and healthy up to five months ago, when she had bronchitis, and was, in consequence, confined to bed for a fortnight. When she got about again, she seemed rather weak and ailing at first. Shortly afterwards her mother noticed a swelling of the right side of the abdomen, and this had increased somewhat in size during the last three months. The swelling did not ever disappear, nor did it ever undergo appreciable diminution in volume, but the mother thought that perhaps it was a little "softer" first thing in the morning, or after the child had been lying down for a considerable time.

There was a localised swelling in the right hypochondriac and upper part of the right lumbar region anteriorly, about the size of a

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cricket ball, distinctly seen when the child was standing up, but still more markedly prominent when the child coughed. It was elastic to the touch, and the percussion note over it was resonant. The limits of the swelling were difficult to define; it was indefinitely circumscribed. When the child lay down, there was an indistinct feeling of resistance over the area where the swelling was situated, but no definitely-limited tumour could be made out. Liver dulness was difficult, if not impossible, to define. The urine was normal, and the child's general health appeared to be excellent. Dr. Bunch thought that the general characters of the swelling might, perhaps, be explained by assuming a localised paresis of the abdominal wall.

The PRESIDENT said he had examined the case, but confessed he could not swear to any tumour. There was no doubt a swelling which was apparent when the child stood up, but he could not make out that it was resonant, and it had very indefinite limits. It seemed to him a case of lax abdominal wall, with very distended portion of intestine, probably the colon.

Dr. CAUTLEY said he had had an almost identical case under his care during the last six months, the swelling being in the same region, and most marked when the child stood up. In that case also one felt no definite tumour, and he was inclined to agree with the President that they were cases of weakness of the abdominal wall, producing what might be spoken of as "wind" tumours. Neither in the present case nor in his own could he make out any definite sign of tumour, nor was there any dulness. It occurred to him that there might possibly be a deep-seated collection of serum somewhat analogous to that in a mesenteric cyst. But if that had been the case he thought they would have been able to feel a swelling which was decidedly resistant to the touch.

TWO CASES OF PARALYSIS OF THE SERRATUS MAGNUS AND LOWER HALF OF THE TRAPEZIUS.

By CHARLES E. BEEVOR, M.D. Lond., F.R.C.P.

CASE 1.—E. M., aged 27, occupation joiner and planer, last August had severe pain in the back, in the region of the right supra-spinous fossa. Two months later he noticed difficulty in moving the right shoulder, and a week later he noticed the deformity in the shoulder-blade when the arm was advanced. When first seen on December 5th he had complete loss of the right serratus magnus and of the right part of the trapezius below a line drawn horizontally from the second dorsal spine to the inner end of the spine of the scapula.

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On electrical testing there was no reaction to faradism in these two muscles, and a very slight, slow reaction to the constant current. There was no anæsthesia. On advancing the arm, the scapula projected its posterior border, and the patient was not able to elevate the arm above the horizontal line. The serratus had no power to prevent the scapula from being pushed backwards when the advanced arm was resisted and pushed back.

The paralysis of the lower part of the trapezius was best brought out by making the patient carry the arm horizontally backwards against resistance.

CASE 2.—M. A., aged 18, joiner and planer, last September had severe pain behind the shoulder-blade and along the axilla of the right side, especially on movement. Two weeks later he found that he was unable to raise the right arm above the horizontal line. Last December he had complete loss of power of right serratus magnus and lower part of the right trapezius, with complete loss of electrical excitability to faradism and with a slow galvanic response, showing the reaction of degeneration. There was no anæsthesia. Now, when at rest, the scapula on the right side hung slightly higher than on the left, and was slightly tilted with the inferior angle nearer to the spine. On advancing the humerus the scapula projected at its posterior border, but the patient was now able to carry the arm almost up to the vertical position, and it was noticed that after passing the horizontal line the deformity diminished. The weakness of the serratus was still shown by the inability to advance the scapula against resistance, as in pushing forwards.

The part of the trapezius below the level of the second dorsal spine could be shown to be almost absent by making the patient carry the arm horizontally backwards, as in swimming, against resistance, and then the sharp edge of the fibres from the second dorsal spine could be made out.

In paralysis of this part of the trapezius alone, without the serratus, "winging" of the scapula occurs on advancing the arms, but, after the horizontal line is passed, the deformity is abolished by the serratus, which, in this case, had sufficiently recovered to do this.

In paralysis of the serratus alone, the deformity of the scapula increases as the arm reaches the horizontal line, but the arm cannot be raised above this point.

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There was no faradic electric response in the serratus or in the lower part of the trapezius, and, on stimulation, the scapula was here drawn up by the exposed rhomboid, instead of downwards by the trapezius.

Dr. Beevor drew attention to the fact that both the patients were joiners, and men who had much planing work to do, when these muscles would be especially used.

It seemed probable that the lesion was a neuritis, as shown by the pain, and, in the absence of any anæsthesia of the skin, that the lesion was of the intra-muscular motor and sensory nerves, but whether this was caused by cold or by excessive work was doubtful —probably the latter was the chief cause.

Mr. BARKER said that both the cases were exceedingly interesting. He did not notice whether Dr. Beevor suggested that the pain was due to any neuritis or to degenerative changes in the muscles. He would be very interested to hear some suggestion on that point. Did Dr. Beevor suppose that the man's occupation had set up neuritis which had been followed by degenerative changes?

Mr. EDMUND OWEN said he thought in both cases the muscle or the nerve had been tired out. It was very strange that the lower part of the trapezius, which worked with the serratus magnus in planing, should be the only part affected, and that the rhomboids, which were also employed in that action, escaped. The two cases, as seen sitting before them, might easily run in double harness. He had had a case of paralysis of the serratus magnus in a hospital nurse who was constantly rubbing a querulous old lady with chronic pleurisy. The lower part of her right trapezius and serratus magnus had become completely tired out, and she had as marked a scapular deformity as in the case before them. Another case he well remembered was that of a little girl who was a very energetic skipper; but although she had tired out the muscles of both shoulder-blades in skipping, paralysis occurred, strange to say, only on one side.

Dr. BEEVOR, in reply, said one of the men was still working, but in a machinery mill. He had instructed the other not to work. He believed that occupation had something to do with both cases. He could not get a history that the plane was used excessively last August. The deltoids had not wasted, though one would expect them to; neither had the triceps been affected. A point he would like to draw attention to was that in these cases there was not the ordinary loss of electrical excitability; they had lost the galvanic response, whereas that was usually retained. He regarded the prognosis as rather grave from that fact. He had seen cases in which, after such excessive use, muscular power had not returned. He thought these cases differed from those of ordinary neuritis. He would have liked to have heard some hints as to why the power of those particular muscles was lost. Possibly it was owing to the nerve supply for them being at the very end of the spinal accessory nerve. He would like to ask Mr. Owen whether the little girl who skipped lost power on the left side.

Mr. EDMUND OWEN, in reply to Dr. Beevor, said power was lost in

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the little girl on only one side. He thought he could understand the rhomboids in the two cases shown that evening not being affected, because they would not do nearly as much work as the others in planing. The drawing back of the plane did not require the same effort as the thrusting of it forward along a resisting board. Evidently the rhomboids left the trapezii to do the easy work of drawing back the plane. He regarded the paralysis as entirely functional.

TWO CASES OF PARTIAL PARALYSIS OF THE FOREARM AND HAND: (1) FROM ESMARCH'S BANDAGE (2) FROM A SPLINT.

By FREDERICK C. WALLIS, M.B., B.C. Camb., F.R.C.S. Eng.

THE first case was that of a young woman who had congenital synostosis of the upper ends of both radii and ulnæ and, on one side, ischæmic paralysis (Volckmann's), which supervened on using Esmarch's band during an operation for the relief of the congenital deformity.

In the second case the patient suffered from pressure paralysis, the result of tight splinting for backward displacement of the upper end of the ulna. There was atrophy of the muscles of the hand supplied by the ulna nerve.

TWO CASES OF ISCHÆMIC PARALYSIS IN CHILDREN

By HAROLD L. BARNARD, M.S. Lond., F.R.C.S. Eng.

THE two patients, a boy, aged 3, and a girl, aged 4, showed typical ischæmic paralysis of the forearm in each case. The deformity was removed by splitting and elongating the flexor tendons through a longitudinal incision above the wrist, and the power of supination was restored by elongating the pronator radii teres and detaching the pronator quadratus from its ulnar attachment.

Mr. EDMUND OWEN said that he was a little surprised to hear of Mr. Wallis using an Esmarch's bandage in operative work; he had been under the impression that such constriction was almost a thing of the past; if he (Mr. Owen) had a resection to do or a nerve to expose, he never used Esmarch's bandage, but picked up all bleeding vessels as he met them. His experience with Esmarch's bandage was that, though one had a bloodless field for the actual operation, as soon as it was finished, every vessel that had been cut promptly asserted itself. For operations in children the use of an Esmarch bandage was extremely

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dangerous. Mr. Wallis was, however, certainly engineering his patient's affection very happily now. The case which particularly pleased him was Mr. Barnard's second one. He had never seen so beautiful a result after an operation for ischæmic paralysis. Mr. Barnard's first case, however, he did not regard as one of ischæmic paralysis, but rather as a case of rupture of the flexor tendons with considerable extravasation and a resultant cicatricial shortening. Probably Mr. Barnard would admit that this case was not on all fours with ischæmic paralysis as described by Volckmann.

Mr. WALLIS, in reply, said he agreed with Mr. Owen in his strictures, and would even go further. He (Mr. Wallis) never used an Esmarch bandage if he could avoid it, but it was essential in that case not to cut a particular nerve. They were over-careful, because the history showed it was a great mistake. He did not know to what extent the good result would go, but that which had occurred was entirely due to Dr. William Hunter's very kind attention to the case; he had been watching it very anxiously and carefully for some months. He was doubtful if either of Mr. Barnard's cases were typical cases of ischæmic paralysis as described by Volckmann. Of course nothing too good could be said of the excellent surgery, but there had been no nerve symptoms and no loss of sensation. In the case of the girl the nerve was obviously affected, and that was where the question of lengthening tendons came in, because the probabilities were that they would not do well unless there was some return of nerve supply to the muscles on which one was operating.

THREE CASES.

By A. MARMADUKE SHEILD, M.B., B.C. Camb., F.R.C.S. Eng.

(1) *Œsophagotomy for the Removal of an Impacted Coin.*

THE patient, a boy aged 6, swallowed a halfpenny on November 29th, 1900. By means of the X rays the coin was seen to be lodged opposite the top of the sternum, and the patient having been put under chloroform a prolonged attempt to reach the coin was made with forceps and various other instruments, but without success. As there were no symptoms—the boy swallowed both fluids and solids easily—and as the parents objected to operation, nothing was done until December 10th, the twelfth day of impaction. Then, with the parents' consent, the operation was performed. Under chloroform, sponge probangs were passed into the stomach, into which it was thought the coin must have been pushed. The X rays, however, showed that it had only been shifted vertically, and that it was still impacted. The gullet was then opened low down on the left side of the neck and the coin withdrawn by means of a curved forceps. The presence of a large mass of indurated glands lying on the œsophagus added to the difficulty of the operation, and a gush of

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pus that followed the removal of the coin showed that ulceration had already commenced. The wound in the œsophagus was closed with fine catgut, but that in the neck was left entirely open and plugged with gauze. The child had violent vomiting after the operation, and large quantities of saliva and mucus poured from the wound. The wound was treated with irrigation and light tamponading. Rectal feeding was resorted to for the first fortnight, then the child began to swallow small quantities of fluid nutriment, some of which, however, occasionally escaped through the wound. When shown, about two months after the operation, the wound was healed, with the exception of a small sinus, from which some moisture occasionally exuded.

The PRESIDENT asked whether Mr. Sheild would be willing to show the boy a year hence, as it would be very interesting to see if he had any sequelæ after such a necessarily prolonged operation.

Mr. KELLOCK asked Mr. Sheild whether he could explain the difficulty in removing the coin by the aid of the coin-catcher, for, as a rule, coins were easily removed by this means. Lately he had had two cases in children. One was aged 3 years, and the X rays showed a halfpenny fixed in the same position as in the present case, and it was removed by the catcher without an anæsthetic. In the other child, a halfpenny was impacted in the œsophagus eight days, but it came out easily under an anæsthetic. Probably the President would also remember a patient under his care who had two halfpennies impacted in the lower end of the œsophagus, and they were vomited after having been there some considerable time.

Mr. BARKER had had experience of a similar case, in which the coin was impacted for some weeks. There was no difficulty in removing it by the aid of the coin-catcher. He thought Mr. Kellock had raised an interesting question. Perhaps the very rarity of œsophagotomy in children was a sufficient proof of the ease with which removal was generally effected by the coin-catcher. In Mr. Sheild's case there were evidently some exceptional circumstances.

Mr. SHEILD, in reply, said that he had on several previous occasions successfully employed the coin-catcher for the removal of coins as well as false teeth from the gullet. In the present case, however, although he apparently shifted the coin he could not extract it by this means, and it required considerable force to eventually withdraw it with forceps. Emetics were not given because the coin had been impacted for some days, and violent retching might have led to rupture of the œsophagus.

(2) *Removal of an Enormous Chronic Abscess.*

The patient, a man, aged 39, was admitted into St. George's Hospital in December, 1900, with a large swelling that reached from the middle of the ilium to the middle of the left leg, and had been growing for about two years. The limb appeared to be swollen to

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more than double its natural size. The swelling fluctuated everywhere and did not seem to be connected with the pelvis above. It was laid open by an incision 24 inches long, and was found to be full of cheesy pus, the vasti muscles being also thickly studded with grey and yellow tubercle. The cavity was cleared, flushed with a 1 in 2,000 biniodide lotion, and packed with gauze. Silk sutures were also passed, but not tied. The gauze was renewed every three days, and by the seventh day the whole surface was covered with pink granulations, and the sutures were now tied. Immediate union took place, and the whole cavity was obliterated. When shown the man was strong and well, and a long scar alone marked the site of the abscess.

(3) *Gastro-Jejunostomy for Pyloric Obstruction.*

The patient, a woman, aged 56, was operated upon in October, 1900. When admitted she was in such a desperate condition from vomiting and emaciation that it appeared doubtful whether she would survive any operation. Mr. Sheild joined the jejunum to the anterior surface of the stomach by a medium-sized Murphy button, and the whole procedure did not occupy more than 15 minutes. The pylorus was large, knobby, and thickened, and there was one large gland in the neighbourhood which made him feel fairly certain that it was a case of carcinoma of the pylorus; but the woman had so manifestly improved since the operation that he hoped he had been mistaken, and that the condition was inflammatory and not cancerous. When shown the woman had gained two stone in weight, and had returned to her work.

GASTRO-JEJUNOSTOMY FOR SIMPLE PYLORIC STRICTURE.

By STANLEY BOYD, M.B., B.S. Lond., F.R.C.S. Eng.

THE patient, a man aged 47, had suffered for eight or nine years from severe pain in the chest and abdomen after partaking of food. Vomiting began six years ago in attacks lasting from one to three weeks, with intervals of from four to six weeks, and had continued up to date of admission to hospital. Vomiting usually occurred after lying down at night; about three pints of watery matter

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were usually brought up. There was no hæmatemesis but much flatulence. After a month of daily vomiting, he was admitted in December, 1900, under Dr. Abercrombie's care, and was transferred to Mr. Boyd on December 27th. Even after a fortnight's rest and treatment, which arrested the vomiting, the patient was very thin pale, and feeble. The stomach formed a visible tumour in the left hypochondriac, lumbar, epigastric, and umbilical regions. No tumour or hard mass could be felt. The capacity of the stomach was about two quarts; there were no sarcinæ in the contents. On December 29th posterior gastro-jejunostomy was performed. The opening was from 1½ to 2 inches long between the stomach and the first loop of the jejunum, and the edges were secured by three lines of continuous fine silk suture on either side of it. The most external held the sero-muscular coats; the second, the cut edges of the same coats; and the innermost united the edges of the cut mucosæ. With regard to the after-course, the patient vomited once only. Peptonised milk was given by the mouth soon after, and was continued in increasing quantities. Nutrient enemata were also given for two days. Minced meat and bread were given on January 5th, and the quantity was quickly increased, the appetite being hearty. The wound healed perfectly. The temperature was 100° F. on the second evening, 101° on the third and fourth, and then practically normal. As to the patient's weight, nine days before operation it was 7 stone 12 lbs.; 12 days after the operation it was 7 stone 7 lbs.; 26 days after operation it was 8 stone 7 lbs.; and 40 days after operation it was 9 stone 2 lbs. [NOTE.—A few weeks later this man had regained his full weight, 10 stone 4 lbs., and was doing his ordinary work.]

The PRESIDENT said that the symptoms in Mr. Sheild's and Mr. Boyd's cases seemed to have been very similar, but the operations were very different. In one case the anterior method was chosen and a Murphy button used, while in the other case the posterior method was employed with simple stitching and no button. He would like to hear opinions as to the two methods.

Mr. BARKER regarded the cases as very important, and he thought Fellows should be grateful to those who had shown them. The cases emphasised what they ought to take to heart, namely, the necessity of interference in grave cases of stomach disease. Operation ought to be encouraged in such cases. There was a notion prevailing that the operations were more dangerous than they really were. The patients in the present cases were *in extremis*, and, therefore, under conditions most unfavourable for successful operation. But they had been operated upon skilfully and rapidly, and the results had been perfect. There were many

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people who suffered for years from non-malignant disease who would be relieved with great certainty by operation at a comparatively early stage. There were cases of malignant disease that were immensely relieved by operation, and in the present day, when much more was known than formerly of the technique of such operations, there was good prospect of putting them on their legs again. The rapid and decided improvement in Mr. Sheild's case after operation was most interesting, but he feared that the rapidly-increasing weight of the patient did not make it quite certain that the case was non-malignant. One saw similar remarkable improvement in even advanced cases of malignant disease, and considerable lengthening of life. Some years ago a gentleman crawled into his room in apparently the last stage of weakness and asked for an operation to be done at once. He (Mr. Barker) was convinced that a few more days without operation would have meant starvation; the man's weight had fallen from 15 stone some pounds to 8 stone 6 lbs. With fear and trembling he did a posterior gastro-enterostomy, after which the patient's weight rose to 12 stone 4 lbs. in a comparatively short time. He remained at that weight, but he heard since that he died of malignant disease, evidently a recurrence. He had seen other similar cases. As to the comparative merits of the anterior and the posterior operations, he supposed that the choice must be left to the individual surgeon. For several years he had done the anterior operation, the first one 15 years ago, and that was successful. But he had performed the posterior method for several years past and could not help giving it the preference. He did not believe that, as a rule, it was the more difficult operation. There were conditions in which the anterior operation might be very difficult, as, for instance, in a case he had in private, where the posterior surface of the stomach was adherent to the surface of the colon. He thought the resulting condition after the posterior operation was better than that after the anterior, because the stomach more readily discharged its contents into the opening, and he believed there was less liability to kinking from the posterior than from the anterior operation. As to Murphy's button, he began by using the ordinary incisions and the suture, and used the button later on with both success and failure, but was on the whole favourably impressed by it. For the last two or three years he had not used the button except in one or two intestinal cases, but not for gastro-enterostomy. He did not think much time was gained by its use, after a little practice had been gained in both operations. He could imagine the operation by suture being done in nearly as short a time as when using the button. He was aware that many buttons remained behind in the intestines, also in the stomach, but he had not seen them give trouble. He occasionally saw a lady who was carrying one about with her, but quite unconsciously, though she had had it two years. He had a man whose button worked its way into the lower bowel, where it set up much irritation and ulceration, and when removed was found to have radiating from it in all directions small fish bones. It appeared to have been well tolerated until it reached the sphincter.

Mr. WALLIS asked in what posture the patient was put after the operation. He had seen a fair number of such cases, and had found that when put in the sitting posture they had less abdominal discomfort and less distension than in any other posture.

Mr. EDMUND OWEN said that after anterior gastro-jejunostomy he got his patients to lie on the face for an hour after dinner, as this allowed the contents of the stomach to pass easily into the small intestine.

Mr. SHEILD, in reply, said that, as far as he could recollect, the woman

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for the first two or three days after the operation lay on her back quite inert and almost lifeless; she could hardly have been put into a special position. There was a good deal in the remark that position might assist the after treatment. It was his usual practice to allow his patients in such cases to lie in whatever position they found most comfortable. He thought that the old plan of keeping patients on their backs after such operations had nothing to recommend it. In reply to Mr. Barker, all he could say was that anyone, who could properly suture a case of gastro-jejunostomy in the same space of time that a Murphy button could be inserted, must indeed be a very expert surgeon.

A CASE OF PERNICIOUS ANÆMIA, TREATED WITH ANTISTREPTOCOCCIC SERUM.

By WILLIAM HUNTER, M.D. Edin., F.R.C.P. Lond.

A MAN, aged 37, traveller; previous health very good, habits excellent. *Present illness* began two years ago: loss of appetite, pallor, lemon colour, periodic attacks of pain in mouth and stomach, especially attacks of sore tongue, with big red patches on its dorsum and edges, coming on almost every three weeks, lasting two or three days, and always followed by gastric symptoms—pain, nausea, retching. Condition of tongue considerably improved after removal of three very bad teeth, but never actually disappearing; gastric pains continued, with steadily increasing anæmia.

Condition on admission extremely anæmic, with lemon colour, urobilinuria. Blood corpuscles 27 per cent.; hæmoglobin 35 per cent.; dental necrosis, with suppuration of gums at one part (a condition existing for 10 years); gastric pains; and nervous symptoms—tingling and numbness in fingers. Temperature irregular.

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*Results of Treatment.**

Period.	Treatment.	Blood—Percentage.		Remarks.
		Corp.	Hæmoglobin.	
Three weeks (July 9 to Aug. 1, 1900).	Oral and intestinal antisepsis, and three injections of serum—July 9, 13, 23.	65	75	Much improved, but no increase of weight.
Two weeks (Aug. 1 to Aug. 16).	Antisepsis as before, *plus* one injection (5 c.c.). Removal of all sepsis from mouth.	55	72	Went to country on Aug. 16.
Six weeks (Aug. 16 to Sept. 26).	Antisepsis as before ...	64		Looks much better—has put on 7 lbs. in weight.
Five weeks (Sept. 26 to Nov. 1).	Antisepsis as before, *plus* liquor arsenicalis, ♏ 3 *ter die*.	80	90	Looks in robust health has put on a stone in weight. Two attacks of sore tongue.
Seven weeks (Nov. 1 to Dec 20).	As before	90	92	Weight maintained
Four weeks (Dec. 20 to Jan. 18).	As before	94	104	Weight maintained.
Three weeks (Jan. 18 to Feb. 7, 1901).	As before	94	106	Weight maintained. Jan. 31, an attack of sore tongue. Patient looks in robust health.

Dr. JOHN BROADBENT asked what was the character of the red blood corpuscles; were there many nucleated red corpuscles? He thought the chief difference between the pernicious and the secondary anæmias was the great deformity in size and shape of the red corpuscles, many of which presented amœboid processes, and the fact that they stained very badly. With regard to the question of septicæmia and toxæmia in connection with pernicious anæmia, there had recently been two cases in St. Mary's Hospital which could not be attributed to septic absorption from the intestines. One was a man who came in in an almost moribund condition gasping for breath, profoundly anæmic, with the lemon yellow countenance, characteristic of pernicious anæmia. The hæmoglobin was about 30 per cent., red corpuscles 1,600,000, with great deformity in size and shape. He was treated by the hypodermic injection of cacodylate of soda, and after three weeks the improvement was marvellous, both in the quality of the blood and the man's general appearance. After three weeks the injection was discontinued, and the man went out apparently cured four weeks later. The second case was one of characteristic pernicious anæmia. The blood changes were very marked; the corpuscles 1,480,000, and hæmoglobin about 25 per cent. She got rapidly worse and died, and at the autopsy there was an immense quantity of free iron in the liver. But she had what there was no evidence of during life, namely, advanced kidney disease, a contracted granular kidney with

* For full report of case see author's 'Pernicious Anæmia,' 1901.

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extreme fibroses and small-celled infiltration, suggestive of contracting large white kidney. During her stay in hospital there had been no albuminuria and no uræmic symptoms. He saw a third case with all the characteristics of pernicious anæmia. At first he thought it was a simple pernicious anæmia, but subsequently a growth could be felt in the abdomen. He thought, therefore, that septic absorption from the intestinal tract was not the only cause of the features of pernicious anæmia, and the first case mentioned seemed to show that treatment other than intestinal antiseptics could effect a very marked improvement, and apparently a cure, though the possibility of a relapse must be borne in mind.

TWO CASES TO SHOW THE DESIRABILITY, IN CERTAIN CASES, OF REMOVING THE TONSILS BY ENUCLEATION.

By StClair Thomson, M.D. Lond., F.R.C.S. Eng.

The first patient was aged 38. In 1894 she was in close attendance on her husband, who was very ill with tonsillitis and a foul discharge from his throat. Soon after she noticed in her tonsils cheesy collections of offensive taste and fœtid odour. The local conditions were very similar to those presented by her son, who is the second case shown at the same time.

For this condition she was under continuous treatment for three years. During two years she attended Dr. Thomson's clinic, and was actively treated with gargles, paints, lozenges, caustics, the galvano-cautery, and incisions laying open the tonsillar crypts. At the same time attention was given to her digestion and general health. She remained unrelieved. Accordingly, two years ago the embedded tonsillar stumps were enucleated under chloroform, and she has since been quite free of the chronic fœtid follicular tonsillitis which had been such a persistent nuisance. There has been some regeneration of lymphoid tissue between the pillars of the fauces, but there are no crypts in which these septic cheesy concretions can form. The patient finds that her voice has not in any way been injured, but rather improved for singing.

The second patient is the son of the former one. He is a boy aged 10½. When 4 years old his tonsils were noticed to be enlarged. and they were removed at the Throat Hospital. He was not again troubled with them until after scarlatina at the age of 6, when they were again enlarged, and were removed with the guillotine at the Throat Hospital by Dr. StClair Thomson. A few months

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later cheesy collections were noticed in the crypts of the tonsils, and these have since continued, almost without intermission. He was under treatment from September to December last.

The chief complaint is of his foul breath, which is said to be most marked in the morning, but is perceptible when he is asleep with his mouth closed. The tonsil stumps are seen to be deeply embedded between the faucial pillars. They are riddled with crypts, some of which are half an inch deep. From these crypts dirty-white, fœtid, cheesy matters are easily extruded. There are no adenoids.

It is seen that it is impossible to thread these tonsillar stumps into the ring of the guillotine. In the previous case all attempts to obliterate the crypts failed. The choice of treatment, therefore, seems to lie between punching out the remains of the tonsil by *morcellement* or removing them by enucleation, as in the former case. The mother of the boy is so gratified with the result in her own case that she is anxious for him to have the same treatment. The operation is performed under a general anæsthetic, chiefly by a pair of curved scissors and the fingers.

Dr. DUNDAS GRANT said the Fellows were indebted to Dr. Thomson for bringing forward an important question. Some seemed to be in favour of using the guillotine for every conceivable form of tonsillar hypertrophy. In many cases that instrument was inadequate to what was required of it, and it seemed strange that some of the methods used abroad should have found so little favour in this country. He was bound to say he had found the blunt-pointed cutting hook sometimes disappointing when cutting from one crypt into another (discission). He found the cuts often healed up again and the patient was no better. He recommended the more frequent use of *morcellement*, and he practised it in a fair proportion of the cases in which he operated, especially in out-patient practice, where, in adults, if the tonsils were hard, he was afraid to let the patients go home and run the risks of subsequent hæmorrhage attendant on the sharp guillotine. Although hæmorrhage need not be a serious thing under one's own eye, it was often galling when occurring at a distance. *Morcellement* might be carried out under gas, and generally one or two bites with a large instrument were sufficient to clear out as much of the tonsil as was required.

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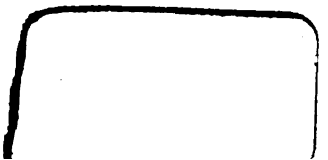

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